SUZUKI

DR-Z400SM

OWNER'S MANUAL

This owner's manual contains
important safety information.
Please read it carefully.

Part No. 99011-29F92-03A
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California Proposition 65 Warning

⚠ WARNING

Engine exhaust, some of its constituents, and certain product components contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

This manual should be considered a permanent part of the motorcycle and should remain with the motorcycle when resold or otherwise transferred to a new owner or operator. The manual contains important safety information and instructions which should be read carefully before operating the motorcycle.

IMPORTANT

WARNING/CAUTION/NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol ⚠ and the words WARNING, CAUTION and NOTE have special meanings. Pay special attention to the messages highlighted by these signal words:

⚠ WARNING

Indicates a potential hazard that could result in death or injury.

CAUTION

Indicates a potential hazard that could result in motorcycle damage.

NOTE: Indicates special information to make maintenance easier or instructions clearer.

WARNINGs and CAUTIONs are arranged like this:

⚠ WARNING-or-CAUTION

The first part will describe a POTENTIAL HAZARD and WHAT CAN HAPPEN if you ignore the WARNING or CAUTION.

The second part will describe HOW TO AVOID THE HAZARD.

FOREWORD

Motorcycling is one of the most exhilarating sports and to ensure your riding enjoyment, you should become thoroughly familiar with the information presented in this Owner's Manual before riding the motorcycle.

The proper care and maintenance that your motorcycle requires is outline in this manual. By following these instructions explicitly you will ensure a long trouble-free operating life for your motorcycle. This motorcycle also conforms to the U.S. Environmental Protection Agency (EPA) and California Air Resource Board (CARB) emission regulations which apply to new motorcycles. The Proper adjustment of engine components is necessary for this motorcycle to comply with the EPA and CARB regulations. Therefore, please follow the maintenance instructions closely to ensure emission compliance. Your authorized Suzuki dealer has experienced technicians that are trained to provide your machine with the best possible service with the right tools and equipment.

All information, illustrations, photographs and specifications contained in this manual are based on the latest product information available at the time of publication. Due to improvements or other changes, there may be some discrepancies between information in this manual and your motorcycle. Suzuki reserves the right to make production changes at any time, without notice and without incurring any obligation to make the same or similar changes to vehicles previously built or sold.

Suzuki Motor Corporation believes in conservation and protection of Earth's natural resources. To that end, we encourage every vehicle owner to recycle, trade in, or properly dispose of, as appropriate, used motor oil, coolant and other fluids, batteries, and tires.

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THE SPORT OF MOTORCYCLING

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THE SPORT OF MOTORCYCLING

Your motorcycle and this owner's manual have been designed by people like you who enjoy motorcycling. People become motorcyclists for many reasons. For starters, street riding is fun and invigorating. But no matter why you became a motorcyclist, or how experienced you are, you will eventually face some challenging situations.

In preparing for these challenges, you will be fine-tuning your coordination, concentration, and attitude. Learning the skills and strategies associated with motorcycling is the basis for safety participating in this sport. Many motorcyclists find that as they become better riders, they also get more enjoyment from the freedom unique to motorcycling.

Please remember:

MOST ACCIDENTS CAN BE AVOIDED

The most common type of motorcycle accident in the U.S. occurs when a car traveling towards a motorcycle turns left in front of the motorcycle. Is that because other drivers are out to get motorcyclists? No. Other drivers simply don't always notice motorcyclists.

Ride defensively. Wise motorcyclists use a strategy of assuming they are invisible to other drivers even in broad daylight. Pay careful attention to other motorists especially at intersections because they may not be paying attention to you. Select a lane position that gives you the best view of others, and other motorists the best view of you. Wear bright, reflective clothing. Put reflective strips on your helmet.

IF YOU DON'T HAVE A HELMET-BUY A HELMET, AND WEAR IT EVERY TIME YOU RIDE

Most accidents occur within a few miles of home, and almost half occur at speeds of less than 30 mph. So even if you're just going on a quick errand, be prepared - strap on your helmet before you take off.

Helmets do not reduce essential vision or hearing. Generally, helmets do not cause or intensify injury if you crash. Helmets simply help your skull protect your intelligence, your memory, your personality, and your life.

Your eyesight is equally valuable. Wearing suitable eye protection can help keep your vision unblurred by the wind and save your eyes from airborne hazards like bugs, dirt, or pebbles kicked up by tires.

IF A COLLISION IS IMMINENT, DO SOMETHING!

Many riders fear locking up their brakes or haven't learned to swerve to avoid an accident. Many inexperienced riders (and too many seasoned riders) use only their rear brake in an emergency, resulting in unnecessary impacts in some cases and unnecessarily high impact speeds in other cases. Your rear brake can only provide about 30% of your motorcycle's potential stopping power. The front and rear brakes can and should be used together to maximize braking effectiveness.

Experienced motorcyclists learn to "cover" the front brake lever by lightly resting a couple of fingers over the lever when riding in traffic and near intersections to give their reaction time a head start.

Emergency stopping and swerving are techniques that you should practice and master before you find yourself in an emergency situation. The best place to practice such techniques is in a controlled environment such as the Motorcycle Safety Foundation's (MSF) rider training courses. The MSF's Motorcycle Rider Courses (fundamental techniques) and Experienced Rider Courses (advanced strategies) present hands-on instruction of the basic principles of motorcycling and a variety of accident-avoidance maneuvers. Even a seasoned motorcyclist can improved his or her riding skills, and pick up a few new skills, through these courses. Some insurance companies even offer discounts to course graduates.

SPECIAL SITUATIONS REQUIRE SPECIAL CARE

Of course, there are some times when full-force braking is not the correct technique. When the road surface is wet, loose, or rough, you should brake with care. When you're leaned over in a corner, avoid braking. Straighten up before braking. Better yet, slow down before entering the corner.

In these situations, the traction available between your tires and the road surface is limited. Overbraking when traction is limited will cause your tires to skid, possibly resulting in loss of directional control or causing you and your motorcycle to fall over.

KNOW YOUR LIMITS

Always ride within the boundaries of your own skills. Knowing these limits and staying within them will help you avoid accidents.

A major cause of accidents involving only a motorcycle (and no cars) is going too fast through a turn. Before entering a turn, select an appropriately low cornering speed.

Even on straight roads, ride at a speed that is appropriate for the traffic, visibility and road conditions, your motorcycle, and your experience.

Riding a motorcycle safely requires that your mental and physical skills are fully part of the experience. You should not attempt to operate a motor vehicle, especially one with two wheels, if you are tired or under the influence of alcohol or other drugs. Alcohol, illegal drugs, and even some prescription and over-the-counter drugs can cause drowsiness, loss of coordination, loss of balance, and especially the loss of good judgment. If you are tired or under the influence of alcohol or other drugs, PLEASE DO NOT RIDE your motorcycle.

BE EXTRA SAFETY-CONSCIOUS ON BAD WEATHER DAYS

Riding on bad weather days, especially wet ones, requires extra caution. Braking distances increase on a rainy day. Stay off the painted surface marks, manhole covers, and greasy-appearing areas, as they can be especially slippery. Use extra caution at railway crossings and on metal gratings and bridges. When it starts to rain, any oil or grease on the road rises to thesurface of the water. Pull over and wait a few minutes until this oil film is washed away before riding. Whenever in doubt about road conditions, slow down!

PRACTICE AWAY FROM TRAFFIC

Your riding skill and your mechanical knowledge form the foundation for safe riding practices. We suggest that you practice riding your motorcycle in a non-traffic situation until you are thoroughly familiar with your machine and its controls. Again, consider taking one of the MSF's Rider Courses. Even experts will be pleased with the caliber of the information presented in these courses. As the MSF says: "The more you know, the better it gets!"

INSPECTION BEFORE RIDING

Review the instructions in the "INSPECTION BEFORE RIDING" section of this manual. Perform an entire pre-ride inspection before you head out on the road. Spending a few minutes preparing your machine for a ride can help prevent accidents due to mechanical failure or costly, inconvenient breakdowns far from home.

ACCESSORIES AND LOADING

The accessories you use with your motorcycle and the manner in which you load your gear onto the bike might create hazards. Aerodynamics, handling, balance, and cornering clearance can suffer, and the suspension and tires can be overloaded. Read the "ACCESSORY USE AND MOTORCYCLE LOADING" section.

CARRYING A PASSENGER, ON ROAD

Carrying a passenger, when done correctly, is a great way to share the joy of motorcycling. You will have to alter your riding style somewhat since the extra weight of a passenger will affect handling and braking. You may also need to adjust tire pressures and suspension; please refer to the Tire Pressure and Loading section and the Suspension section for more details.

A passenger needs the same protection that you do, including a helmet and proper clothing. The passenger should not wear long shoe laces or loose pants that could get caught in the wheel or the chain. Passengers must be tall enough that their feet reach the footrests. Note the limits on carrying a passenger off-road in the "ADDITIONAL CONSIDERATIONS WHEN RIDING OFF-HIGHWAY"section.

MOTORCYCLE SAFETY FOUNDATION'S "RIDING TIPS AND PRACTICE GUIDE" HANDBOOK (FOR OWNERS IN USA)

This special handbook, supplied with your owner's manual, contains a variety of safety tips, helpful hints, and practice exercises. This manual can increase your riding enjoyment and safety. You should read it thoroughly.

BE STREET SMART

Always heed speed limits, local laws, and the basic rules of the road. Set a good example for others by demonstrating a courteous attitude and a responsible riding style.

CONCLUSION

Traffic, road and weather conditions vary. Other motorists' actions are unpredictable. Your motorcycle's condition can change. These factors can best be dealt with by giving every ride your full attention.

Circumstances beyond your control could lead to an accident. You need to prepare for the unexpected by wearing a helmet and other protective gear, and learning emergency braking and swerving techniques to minimize the damage to you and your machine.

The best way to learn basic riding skills and evasive maneuvers or refresh your own riding skills is to take one of the courses offered by the Motorcycle Safety Foundation. Your Suzuki dealer can help you locate the fundamental or advanced riding skills course nearest you, or owners in the USA can call toll free 1-800-446-9227.

Good riding on your new Suzuki!

ADDITIONAL CONSIDERATION WHEN RIDING OFF-HIGHWAY

Off-highway riding calls for off-highway protective gear

In addition to the reasons cited above for wearing a helmet and eye protection on the street, the trail presents its own hazards. Visibility and trail conditions can vary greatly from section to section and season to season. These changes are sometimes unpredictable, and even an experienced rider can have an accident. There may be branches hanging over the trail at eye level. Wear a helmet and eye protection every time you ride.

Wear protective clothing when you ride. Avoid loose clothes or scarves, which could get caught in moving parts. Abrasion injuries can be minimized by wearing protective clothing including gloves, strong boots that fit over the ankle, long pants, and a long sleeve shirt or jacket. Experienced riders often wear a kidney belt and chest or back protector for additional comfort and protection.

Carrying a Passenger, Off-Road

Although your Dual Sport motorcycle is equipped to carry a passenger, carrying a passenger or cargo while riding in rough terrain could be hazardous. Carrying a passenger or strapping cargo to the passenger seat can greatly reduce your ability to balance and steer the motorcycle and deal with quickly changing off-road conditions. Ride at a reduced speed and limit your off-road riding to smooth, level surfaces when carrying a passenger or cargo.

Use the buddy system

Share the fun of a good off-road ride. A riding partner can also be a great help if one of you gets stranded or injured. If none of your friends rides off-highway, ask your Suzuki dealer how to go about joining a club. If your friends do ride, you can all join a club or start one of your own.

Obstacles come with the territory

Negotiating obstacles is a normal part, and often the most fun and challenging part, of off-highway riding, Scan the areas ahead. You may come upon naturally-occuring obstacles such as ruts, bumps, trees, low branches, blind corners, or sudden dropoffs. You may encounter animals, other recreational vehicles, horseback riders, or hikers. The sooner you notice potential obstacles and trail-sharing needs, the sooner you can plan your actions accordingly.

Remember: Practice on level ground

Before you begin riding off-highway, you should find a good place to practice the skills you need to ride safely. Review the Motorcycle Safety Foundation's "Tips and Practice Guide for the Off-Highway Motorcyclist" Handbook supplied with this owner's manual (for owners in USA). This special handbook contains a variety of safety tips, helpful hints, and practice exercises that can increase your riding enjoyment and safety.

Find a flat, open area with enough space to maneuver. Review local laws to make sure you are not trespassing or violating other ordinances. Check with your Suzuki dealer or call your local park ranger or police department if you do not know where you can ride.

Review the controls on your motorcycle before riding. Learn to find these controls without looking for them. You will not have time to look for them when you are riding, since you will be concentrating on the terrain.

Be environmentally conscious

Protect your right to ride. When you ride, remember to keep the terrain in good condition. Tread lightly! Resist the urge to blaze new trails– stay on established trail systems. Don't destroy plant life. Leave the area better than you found it. Don't litter – pack out what you packed in. Don't bother wildlife. Don't make your exhaust system noisier. Complaints about noise are one of the biggest threats to the future of our sport. With every rider projecting a courteous and responsible attitude, riding areas can remain open for all to use in the future. You or your riding club may want to volunteer to help your local land manager (usually the U.S. Forest Service, the Bureau of Land Management, or various state agencies) plan, build, and maintain the trail systems you use.

Conclusion

If the off-highway environment, visibility and terrain conditions vary. The actions of other users or animals that you encounter on the trail are unpredictable. Your motorcycle's condition can change. These factors can best be dealt with by practicing the appropriate riding techniques and giving every ride your full attention.

FUEL, ENGINE OIL AND COOLANT RECOMMENDATION

2

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ENGINE OIL 2-3
ENGINE COOLANT SOLUTION 2-5

FUEL, ENGINE OIL AND COOLANT RECOMMENDATION

FUEL

Your motorcycle requires unleaded gasoline with a minimum pump octane rating of 87 ((R + M)/2 method). In some areas, the only fuels that are available are oxygenated fuels. Oxygenated fuels which meet the minimum octane requirement and the requirements described below may be used in your motorcycle without jeopardizing the New Vehicle Limited Warranty or the Emission Control System Warranty.

NOTE: Oxygenated fuels are fuels which contain oxygen-carrying additives such as MTBE or alcohol.

Gasoline Containing MTBE

Unleaded gasoline containing MTBE (Methyl Tertiary Butyl Ether) may be used in your motorcycle if the MTBE content is not greater than 15%. This oxygenated fuel does not contain alcohol.

Gasoline/Ethanol Blends

Blends of unleaded gasoline and ethanol (grain alcohol), also known as GASOHOL, may be used in your motorcycle if the ethanol content is not greater than 10%.

Gasoline/Methanol Blends

Fuels containing 5% or less methanol (wood alcohol) may be suitable for use in your motorcycle if they contain co-solvents and corrosion inhibitors.

DO NOT USE fuels containing more than 5% methanol under any circumstances. Fuel system damage or motorcycle performance problems resulting from the use of such fuels are not the responsibility of Suzuki and may not be covered under the New Vehicle Limited Warranty or the Emission Control System Warranty.

Fuel Pump Labeling

In some states, pumps that dispense oxygenated fuels are required to be labeled for the type and percentage of oxygenate, and whether important additives are present. Such labels may provide enough information for you to determine if a particular blend of fuel meets the requirements listed above. In other states, pumps may not be clearly labeled as to the content or type of oxygenate and additives. If you are not sure that the fuel you intend to use meets these requirements, check with the service station operator or the fuel supplier.

NOTE:

- *To help clean the air, Suzuki recommends that you use oxygenated fuels.*
- *Be sure that any oxygenated fuel you use has octane ratings of at least 87 pump octane ((R+M)/2 method).*
- *If you are not satisfied with the driveablity of your motorcycle when you are using an oxygenated fuel, or if engine pinging is experienced, substitute another brand as there are differences between brands.*

CAUTION

Spilled gasoline containing alcohol can harm your motorcycle. Alcohol can damage painted surfaces.

Be careful not to spill any fuel when filling the fuel tank. Wipe spilled gasoline up immediately.

ENGINE OIL

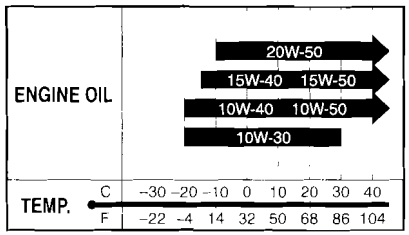
Oil quality is a major contributor to your engine's performance and life. Always select good quality engine oil. Suzuki recommends the use of SUZUKI PERFORMANCE 4 MOTOR OIL or equivalent engine oil. Use SF/SG or SH/SJ in API (American Petroleum Institute) classification with MA in JASO.

SAE	API	JASO
10W-40	SF or SG	–
10W-40	SH or SJ	MA

API: American Petroleum Institute
JASO: Japanese Automobile Standards Organization

SAE Engine Oil Viscosity

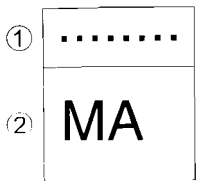
Suzuki recommends the use of SAE 10W-40 engine oil. If SAE 10W-40 engine oil is not available, select an alternative according to the following chart.



JASO T903

The JASO T903 standard is an index to select engine oils for 4-stroke motorcycle and ATV engines. Motorcycle and ATV engines lubricate clutch and transmission gears with engine oil. JASO T903 specifies performance requirements for motorcycle and ATV clutches and transmissions.

There are two classes, MA and MB. The oil container shows the classification as follows.



1. Code number of oil sales company
2. Oil classification

Energy Conserving

Suzuki does not recommend the use of "ENERGY CONSERVING" oils. Some engine oils which have an API classification of SH or higher have an "ENERGY CONSERVING" indication in the API classification doughnut mark. These oils can affect engine life and clutch performance.

Not recommended

Recommended

ENGINE COOLANT SOLUTION

Use engine coolant that is compatible with an aluminum radiator, mixed with distilled water at a 50:50 mixture ratio for engine coolant solution. An engine coolant mixture other than 50:50 can affect cooling efficiency or rust inhibiting performance.

Engine Coolant

Engine coolant should be used at all times in your motorcycle's radiator, even if the temperature in your area does not go down to the freezing point. Engine coolant acts as a rust inhibitor and water pump lubricant as well as an antifreeze solution.

⚠WARNING

Engine coolant is harmful or fatal if swallowed or inhaled.

Do not drink antifreeze or coolant solution. If swallowed, do not induce vomiting. Immediately contact a poison control center or a physician. Avoid inhaling mist or hot vapors; if inhaled, remove to fresh air. If coolant gets in eyes, flush eyes with water and seek medical attention. Wash thoroughly after handling. Solution can be poisonous to animals. Keep out of the reach of children and animals.

CAUTION

Spilled engine coolant can damage painted surfaces.

Do not spill any fluid when filling the radiator. Wipe spilled engine coolant up immediately.

Water for Mixing

Use distilled water only. Water other than distilled water can corrode and clog the aluminum radiator.

Required amount of engine coolant/water solution capacity (total): 1300 ml (2.7 US pt)

Engine coolant	650 ml (1.4 US pt)
Water	650 ml (1.4 US pt)

CONTROLS, EQUIPMENT AND ADJUSTMENTS

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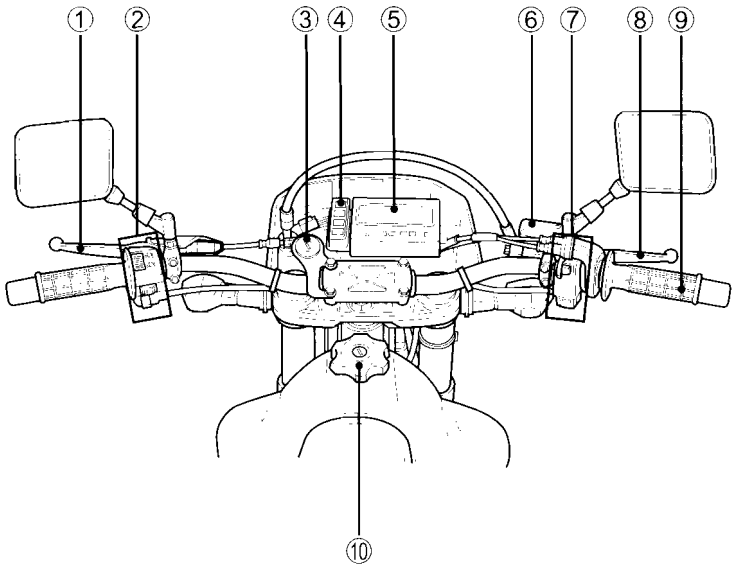
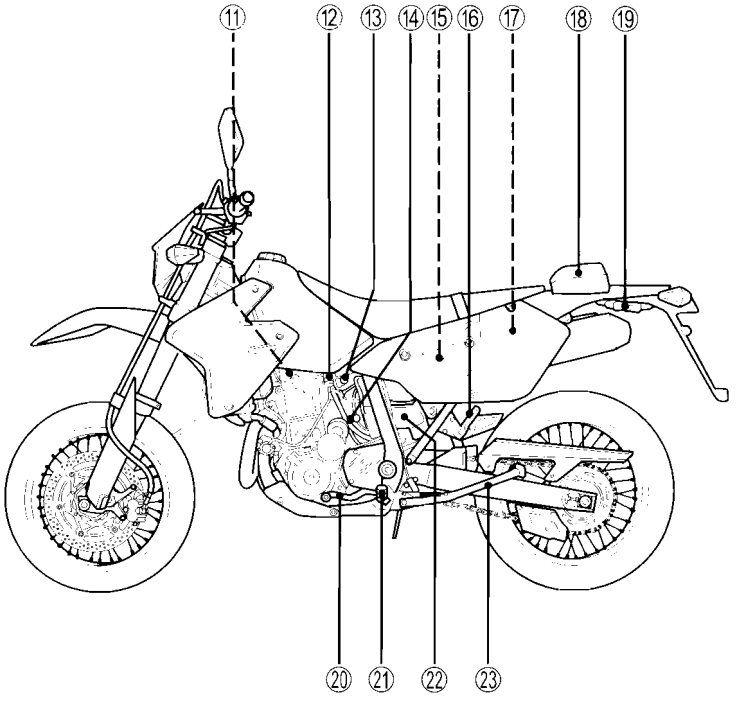
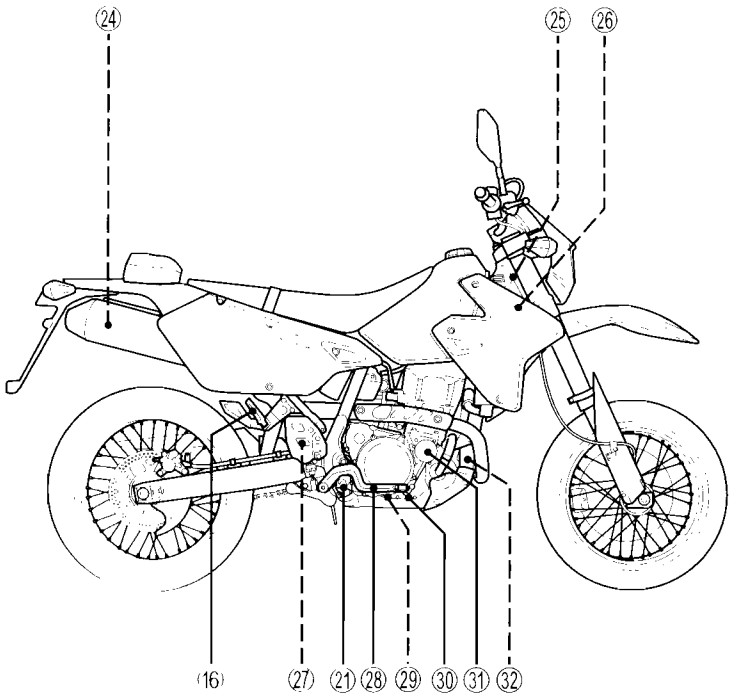
LOCATION OF PARTS



1. Clutch lever
2. Left handlebar switches
3. Ignition switch
4. Indicator light
5. Instrument panel
6. Front brake fluid reservoir
7. Right handlebar switches
8. Front brake lever
9. Throttle grip
10. Fuel tank cap

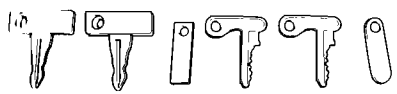


11. Spark plug
12. Fuel valve
13. Choke knob
14. Throttle stop screw
15. Air cleaner
16. Passenger footrests
17. Battery and fuse
18. Tools
19. Helmet holder
20. Gearshift lever
21. Footrests
22. Engine coolant reservoir
23. Side stand



24 Spark arrester
25 Steering lock
26 Radiator cap
27 Rear brake fluid reservoir
28 Rear brake pedal
29 Crankcase drain plug
30 Oil level check bolt
31 Engine oil filter
32 Frame tube drain plug

KEY



This motorcycle comes equipped with two pairs of keys, one for the ignition switch and the other for the steering lock.

An identifying number and the steering lock key number is stamped on the plate provided with the keys instead of on the keys.

Please write your key numbers in the box provided for your future reference.

Key number:	Ignition:
	Steering:

IGNITION SWITCH

The ignition switch has 3 positions.

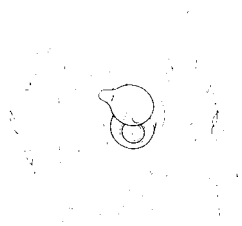
"OFF" position
All electrical circuits are off. The engine will not start. The key can be removed.

"ON" position
The ignition circuit is completed and the engine can run. The key cannot be removed in this position.

NOTE: Start the engine promptly after turning the key to the "ON" position, or the battery will lose power due to consumption by the headlight and taillight.

"P" (PARKING) position
The taillight will come on to increase visibility for temporary road side parking at night. You can remove the ignition key in this position.

STEERING LOCK



To lock the steering, turn the handlebars all the way to the left, insert the key into the lock, turn it counterclockwise and push it further in. Turn the key clockwise while being pushed and pull out the key.

⚠WARNING

Moving the motorcycle while the steering is locked can be hazardous. You could lose your balance and fall, or you could drop the motorcycle.

Never attempt to move the motorcycle when the steering is locked.

INSTRUMENT PANEL

- **INDICATORS** (☞ P3-7)
- **DISPLAY** (☞ P3-7)
- **ODOMETER/TRIP METER SELECTION** (☞ P3-8)
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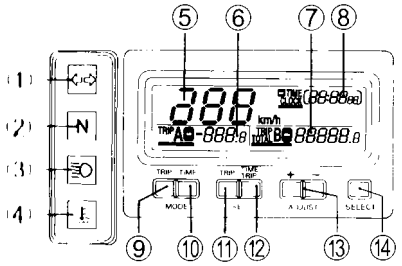
- **CLOCK/STOP WATCH/TIMER SELECTION** (☞ P3-10)
- **CLOCK** (☞ P3-10)
- **STOP WATCH (TIME)** (☞ P3-11)
- **TIMER (⏲ TIME)** (☞ P3-12)
- **TRIP METER ADJUSTMENT** (☞ P3-13)



INDICATORS

Turn Signal Indicator Light ①
When either turn signals is come on, the indicator light will flash simultaneously.

NOTE: If the turn signal light is not operating properly due to bulb filament or circuit failure, the indicator light flickers with high frequency to warn the rider of the existence of a trouble.

Neutral Indicator Light ②
The green light will come on when the transmission is in neutral. The light will go off when you shift into any gear.

High Beam Indicator Light ③
This blue indicator light will come on when the headlight high beam is used.

Coolant Temperature Indicator Light ④
A red light will come on when the engine coolant gets too hot while the engine is operating.

The light should be off during normal operation.

DISPLAY

Speedometer ⑤
The speedometer indicates the road speed in kilometers or miles per hour.

Odometer/Trip Meters ⑥ ⑦
- The odometer registers the total distance that the motorcycle has been ridden.
- The two trip meters are resettable odometers. They can register two kinds of distance at the same time. For instance, the trip meter 1 can register addition mode distance and the trip meter 2 can register subtraction mode distance.

Clock/Stop Watch/Timer ⑧
This display has three functions, clock, stop watch and timer. The clock measures and shows time. The stop watch and timer measures and records time.

"MODE-TRIP" button ⑨
Push the **"MODE-TRIP" button** ⑨ to choose odometer/trip meters display.

"MODE-TIME" button ⑩
Push the **"MODE-TRIP" button** ⑩ to choose clock/stop watch/ timer display. Push the **"MODE-TRIP" button** for 2 seconds to adjust clock.

"SET-TRIP" button ⑪
Push the **"SET-TRIP" button** ⑪ to adjust trip meter and timer.

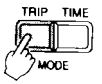
"SET-TIME/TRIP" button ⑫
Push the **"SET-TIME/TRIP" button** ⑫ to:

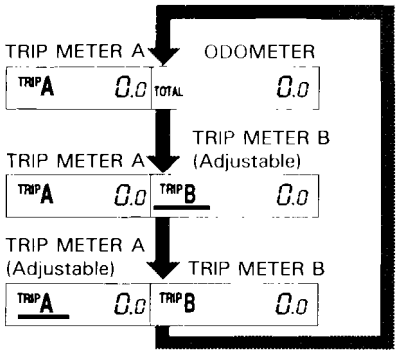
- Choose trip meter mode, addition or subtraction.
- Choose hour, minutes, and second when adjusting clock, stop watch, timer.
- Start and stop the stop watch and timer.
- Reset stop watch and timer at zero.
- Adjust the trip meter correction coefficient.

"ADJUST + / –" button ⑬
Push the **"ADJUST + / –" button** ⑬ to adjust trip meter, clock, stop watch and timer.

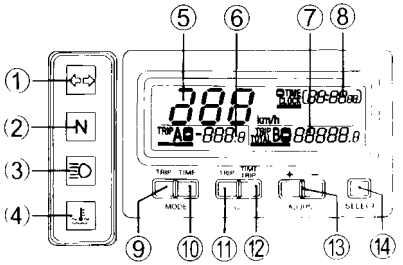
"SELECT" button ⑭
Push the select button for 3 seconds to choose km/h or mph.

ODOMETER/TRIP METER SELECTION





The odometer/trip meters will be chosen by pushing the **"MODE-TRIP" button** ⑨. The display changes TRIP(A)/ODOMETER, TRIP(A)/**TRIP(B)** and **TRIP(A)**/ TRIP(B). **TRIP(A)** or **TRIP(B)** shows that the trip meter is in adjustable mode.



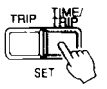
TRIP METER ADJUSTMENT

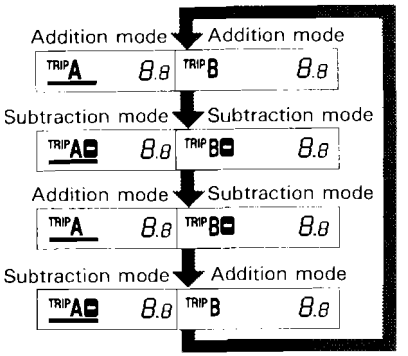
To adjust the trip meter to zero, push the **"SET-TRIP" button** ⑪.

To adjust the trip meter, push the **"ADJUST- + " button or "ADJUST- – " button** ⑬.

Pushing the button will change 0.1 mile at a time. Keeping the button pushed in will change by 0.1 continuously.

TRIP METER SUBTRACTION MODE SELECTION





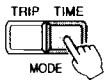
The trip meter has two modes, normal addition and subtraction. The trip meter add mileage in addition mode. The trip meter subtract mileage in subtraction mode. The symbol ▬ beside A or B shows the trip meter is in the subtraction mode.

To choose the mode:

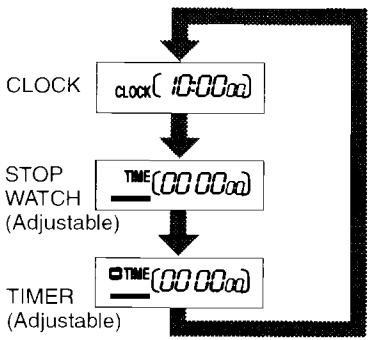
1. Push the **"MODE-TRIP" button** ⑨ to display TRIP A/B.
2. Push the **"SET-TIME/TRIP" button** ⑫ to choose the mode as shown above.

NOTE: When the trip meter exceeds 999.9, the trip meter will return to 0.0 and start counting again.

CLOCK/STOP WATCH/TIMER SELECTION



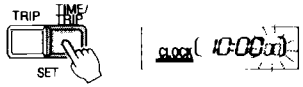
This meter has the clock, stop watch and timer. To select the display, push the **"MODE-TIME" button** ⑩, as shown below.



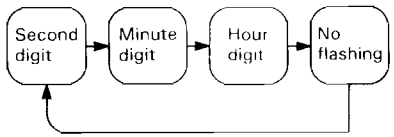
CLOCK

The clock indicates 24-hour mode. Follow the procedure below to adjust the clock.

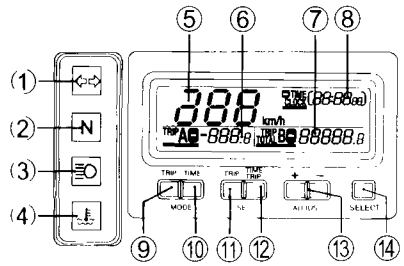
1. Push the **"MODE-TIME" button** ⑩ to display clock.
2. Push the **"MODE-TIME" button** ⑩ for two seconds until second digits blink. **CLOCK** shows that the clock is in adjustable mode.



3. Push the **"SET-TIME/TRIP" button** ⑫ to choose adjustable digits as shown below.



4. Push the **"ADJUST +" button** ⑬ or **"ADJUST –" button** ⑬ to adjust time. Pushing the button will change one hour/ minute/second at a time. Keeping the button pushed in will change time continuously.

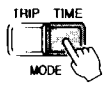


5. Push the **"MODE-TIME" button** ⑩ to return to clock mode.

NOTE: The clock uses battery power even though the ignition switch is turned off. Remove the battery from the motorcycle when the motorcycle is off for more than two months.

STOP WATCH (TIME)

The stop watch indicates 24-hour mode. Follow the procedure to use the stop watch.



1. Push the **"MODE-TIME" button** ⑩ to display the stop watch.

2. Push the **"SET-TIME/TRIP" button** ⑫ for two seconds to reset the stop watch at zero.

NOTE: If the display is changed to other function while the stop watch is counting time, the stop watch continues to count. Even if the ignition switch is turned off while the stop watch is counting time, the stop watch continues to count for 24 hours.

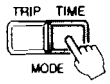
3. Push the **"SET-TIME/TRIP" button** ⑫ to start and stop the stop watch.

NOTE:

- *Pushing the button will start measuring from stopped time until the stop watch is reset at zero.*
- *"TIME" on the display blinks while the stop watch counts time.*

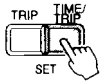
TIMER (TIME)

The timer indicates 24-hour mode. Follow the procedure below to use the timer.

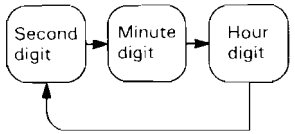


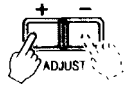
1. Push the **"MODE-TIME" button** ⑩ to display the timer.

2. Push the **"SET-TRIP" button** ⑪. The blinking digits shows that is in adjustable mode.



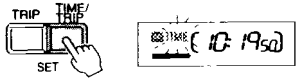
3. Push the **"SET-TIME/TRIP" button** ⑫ to change adjustable digits as shown below.





4. Push the **"ADJUST +" button or "ADJUST -" button** ⑬ to adjust starting time. Pusing the button will change one hour/ minute/second at a time. Keeping the button pushed in will change time continuously.

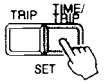
5. Push the **"SET-TRIP" button** ⑪ to return to **TIMER** mode.



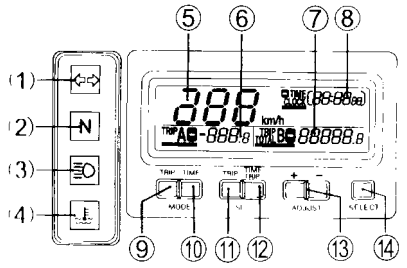
6. Push the **"SET-TIME/TRIP" button** ⑫ to start and stop the timer.

NOTE:

- *Pushing the button will start measuring from stop time until the timer is reset at new time. The timer stops mesuring at zero and display holds at zero.*
- *"TIME" on the display blinks while the timer counts time.*



7. To reset the timer at zero, push the **"SET-TIME/TRIP" button** ⑫ for two seconds.



TRIP METER ADJUSTMENT

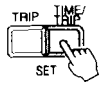
The trip meter mileage changes depending on front tire wear and ground traction. Adjust the correction coefficient to obtain correct milage under various condition.

Trip meter display is multiplied actual distance and correction coefficient. Correction coefficient is adjustable from 70% to 130%.

(Example)
Actual distance: 100 km
Correction coefficient: 90%
Trip meter display:
100 × 90% = 90 km

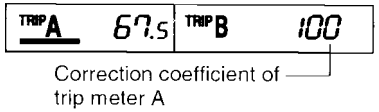
Follow the procedure below to adjust the correction coefficient:

1. Push the **"MODE-TRIP" button** ⑨ to display the trip meter adjustable mode.

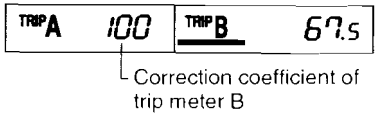


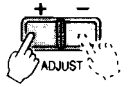
2. Push the **"SET-TIME/TRIP" button** ⑫ for two seconds to adjust the correction coefficient.

Adjustable mode of trip meter A

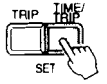


Adjustable mode of trip meter B



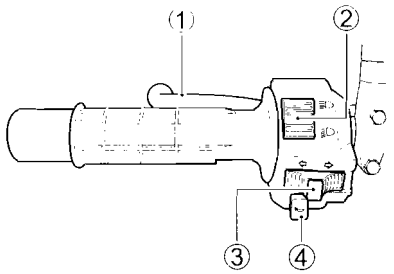


3. Push the **"ADJUST +" button or "ADJUST –" button** ⑬ to adjust correction coefficient. Pushing the button will change one percent at a time.



4. Push the **"SET-TIME/TRIP" button** ⑪ to return to trip meter mode.

LEFT HANDLEBAR



Clutch Lever ①
The clutch lever is used for disengaging the drive to the rear wheel when starting the engine or shifting transmission gears. Squeezing the lever disengages the clutch.

Dimmer Switch ②
"≡D" position
The headlight low beam and taillight come on.

"≡D" position
The headlight high beam and taillight come on. The high beam indicator light also comes on.

Turn Signal Switch ③
Moving the switch to the "⇦" position will flash the left turn signals. Moving the switch to the "⇨" position will flash the right turn signals. The indicator light will also flash intermittently. To cancel turn signal operation, push the switch on.

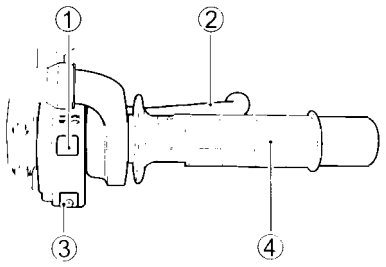
⚠WARNING

Failure to use the turn signals, and failure to turn off the turn signals can be hazardous. Other drivers may misjudge your course and this may result in an accident.

Always use the turn signals when you intend to change lanes or make a turn. Be sure to turn off the turn signals after completing the turn or lane change.

Horn Switch "📯" ④
Press the switch to sound the horn.

RIGHT HANDLEBAR



Engine Stop Switch ①
"⊖" position
The ignition circuit is off. The engine cannot start or run.

"○" position
The ignition circuit is on and the engine can run.

Front Brake Lever ②
Apply the front brake by squeezing the front brake lever towards the grip.

Electric Starter Button "ⓢ" ③
Use this button to operate the starter motor. With the ignition switch in the "ON" position, the engine stop switch in the "○" position, and the transmission in neutral, pull in the clutch lever and push the electric starter button to start the engine.

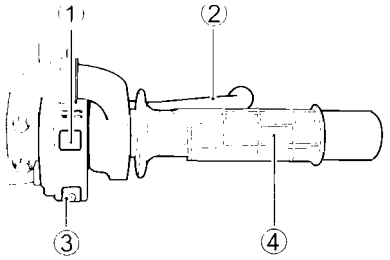
NOTE: This motorcycle is equipped with interlock switches for the ignition circuit and the starter circuit. The engine can only be started if:
- *The transmission is in neutral and the clutch is disengaged, or*
- *The transmission is in gear, the side stand is fully up and the clutch is disengaged.*

NOTE: The headlight will go off when the electric starter button is pushed.

CAUTION

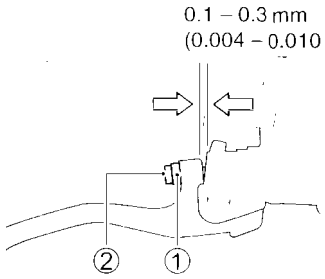
To prevent electrical system damage, do not operate the starter motor longer than five seconds at a time.

If the engine does not start after several attempts, check the fuel supply and ignition system. Refer to the TROUBLESHOOTING section in this manual.



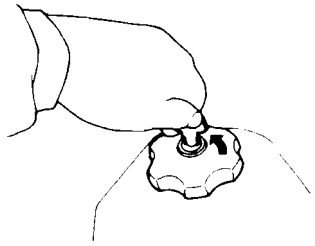
Throttle Grip (4)
Engine speed is controlled by the position of the throttle grip. Turn it toward you to increase engine speed. Turn it away from you to decrease engine speed.

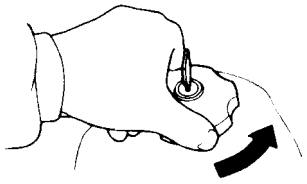
Front Brake Lever Adjustment



Adjust the front brake lever play as follows:
1. Loosen the lock nut (1).
2. Turn the adjusting screw (2) in or out to obtain the correct play of 0.1 – 0.3 mm (0.004 – 0.010 in).
3. Tighten the lock nut securely.

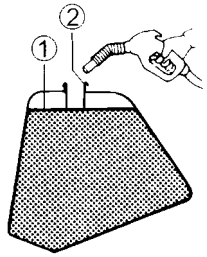
FUEL TANK CAP





Except for California
To open the fuel tank cap, insert the ignition key and turn it counterclockwise. Turn the fuel tank cap counterclockwise and remove it. To close the fuel tank cap, turn it clockwise. The key must be in the cap lock before installing cap. Turn the key clockwise and remove it.

Only for California
To open the fuel tank cap, insert the ignition key into the lock and turn it clockwise. With the key still held in position, lift up the cap. To replace the cap, face the cap mark forward and push the cap down firmly with the key in the cap lock.



1 Fuel level
2 Filler neck

⚠WARNING

Overfilling the fuel tank can cause the fuel to overflow when it expands due to heat from the engine or the sun. Spilled fuel can catch on fire.

Never fill the fuel above the bottom of the filler neck.

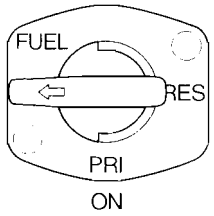
⚠WARNING

Fuel and fuel vapor are highly flammable and toxic. You can be burned or poisoned when refueling.

- **Stop the engine and keep flames, sparks and heat sources away.**
- **Refuel only outdoors or in a well ventilated area.**
- **Do not smoke.**
- **Wipe up spills immediately.**
- **Avoid breathing fuel vapor.**
- **Keep children and pets away.**

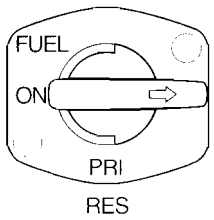
FUEL VALVE

This motorcycle has a manually operated fuel valve. There are three positions: "ON", "RES" and "PRI".



"ON" position

To run the engine, turn the fuel valve to the "ON" position. In this position, fuel will flow from the fuel valve to the carburetor whenever the fuel level in the carburetor drops.

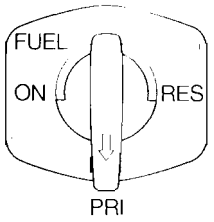


"RES" (RESERVE) position

If the fuel level in the fuel tank becomes too low for the engine to operate with the fuel valve in the "ON" position, turn the fuel valve to the "RES" position to use the reserve fuel supply.

RESERVE FUEL SUPPLY: 2.3 L (0.6 US gal)

NOTE: After turning the fuel valve to the "RES" position, refill the tank as soon as possible. After refueling, be sure to turn the fuel valve back to the "ON" position.



"PRI" (PRIMING) Position

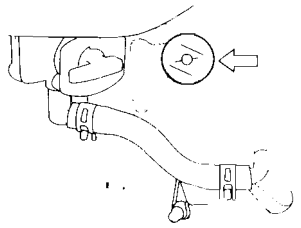
When there is no fuel in the carburetor, turn the lever to the "PRI" position. Upon starting the engine, be sure to return the lever to the "ON" position.

⚠WARNING

Leaving the fuel valve in "PRI" position when the engine is off can be hazardous. The carburetor may overflow and fuel may run into the engine. This can cause a fire or cause severe damage when you start the engine.

Always leave the fuel valve in the "ON" or "RES" position.

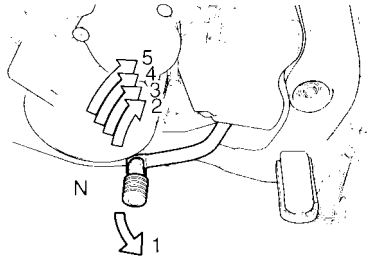
CHOKE KNOB



The carburetor is equipped with a choke system to provide easy starting when the engine is cold. When starting the cold engine, pull the choke knob all the way toward you. The choke works best when the throttle is in the closed position. When the engine is warm, you do not need to use the choke system for starting.

NOTE: Refer to the STARTING THE ENGINE section of this manual for the engine starting procedure.

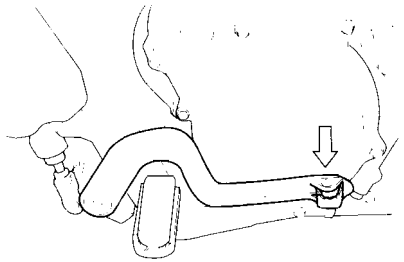
GEARSHIFT LEVER



This motorcycle has a 5-speed transmission which operates as shown. To shift properly, pull the clutch lever and close the throttle at the same time you operate the gearshift lever. Lift the gearshift lever to upshift and depress the lever to downshift. Neutral is located between 1st and 2nd gear. When neutral is desired, depress or lift the lever halfway between 1st and 2nd gear.

NOTE: When the transmission is in neutral, the green indicator light on the instrument panel will be lit. However, even though the light is illuminated, cautiously and slowly release the clutch lever to make sure that the transmission is positively in neutral.

REAR BRAKE PEDAL



Pressing the rear brake pedal will apply the rear brake.

HELMET HOLDER

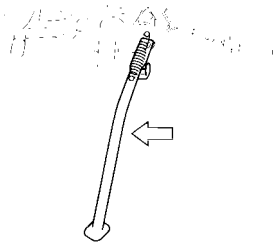
To open the latch of the helmet holder, insert the ignition key into the lock and turn it clockwise. To close the latch, turn the key counterclockwise.

⚠WARNING

Riding with a helmet fastened to the helmet holder can interfere with rider control.

Never carry a helmet fastened to the helmet holder. Fix the helmet securely atop the seat if you must carry it.

SIDE STAND



The motorcycle has a side stand. To place the motorcycle on the side stand, place your right foot on the end of the side stand and push down firmly until the stand pivots fully through its arc and comes to rest against its stop.

An interlock switch is provided to cut off the ignition circuit when the side stand is down and the transmission is in any gear other than neutral.

The side stand/ignition interlock switch works as follows:

1. If the side stand is down and the transmission is in gear, the engine can not be started.
2. If the engine is running and the transmission is shifted into gear with the side stand down, the engine will stop running.
3. If the engine is running and the side stand is put down with the transmission in gear, the engine will stop running.

⚠WARNING

Riding with the side stand incompletely retracted can result in an accident when you turn left.

- **Check operation of the side stand/ignition interlock system before riding.**
- **Always retract the side stand completely before starting off.**

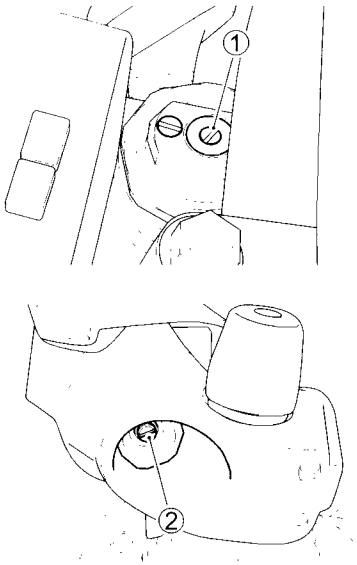
CAUTION

Park the motorcycle on firm, level ground to help prevent it from falling over.

If you must park on an incline, aim the front of the motorcycle uphill and put the transmission into 1st gear to reduce the possibility of rolling off the side stand.

FRONT SUSPENSION

Damping Force Adjustment



The rebound and compression damping force can be individually adjusted by turning the respective adjusters. The compression damping force adjuster (1) is located at the top of the front fork. The rebound damping force adjuster (2) is located at the bottom of the front fork.

To adjust the damping force, turn in the adjuster fully and turn it out. As you turn the adjuster, you will notice the clicks. Count the number of clicks from the fully turned-in position. Fully turned-in position provides stiffest damping force and turning out the adjuster will soften damping force. The compression damping force is set on 13 clicks position at the factory. The rebound damping force is set on 17 clicks position at the factory.

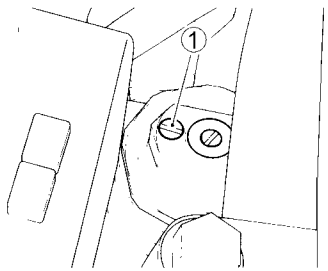
⚠WARNING

Unequal suspension adjustment can cause poor handling and loss of stability.

Adjust the right and left front forks to the same settings.

Air Pressure Adjustment

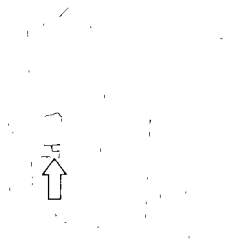
1. Place a block under the chassis tube to lift the front wheel off the ground.



2. Remove the air bleed screw 1 and equalize the air pressure in the front forks to atmospheric pressure.
3. Refit the air bleed screw.
   Standard air pressure:
   0 kPa (0 kgf/cm, 0 psi)

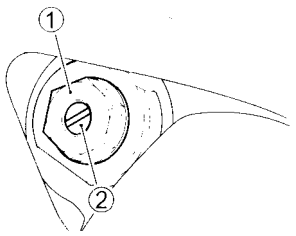
REAR SUSPENSION

Spring Pre-road Adjustment



The adjustment can be performed by changing the adjuster ring position. However, Suzuki recommends that this adjustment be done by your authorized Suzuki dealer since a special tool is needed for this job.

Compression Damping Force Adjustment



Compression damping force can be adjusted in two stages by turning the two adjusters; high stroke speed damping force adjuster 1 and low stroke speed damping force adjuster 2.

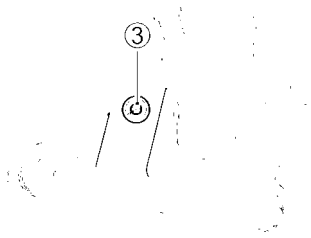
High stroke speed damping force adjuster 1

To adjust the damping force, turn in the adjuster fully and turn it out. Fully turned-in position provides stiffest damping force and turning out the adjuster will soften damping force. Count the number of turns from the fully turned-in position. The high stroke speed damping force is set on 1-1/8 turns out at the factory.

Low stroke speed damping force adjuster 2

To adjust the damping force, turn in the adjuster fully and turn it out. Fully turned-in position provides stiffest damping force and turning out the adjuster will soften damping force. Count the number of clicks from the fully turned-in position. The low stroke speed damping force is set on 10 clicks at the factory.

Rebound Damping Force Adjustment



To adjust the rebound damping force, turn in the adjuster 3 fully and turn it out. Fully turned-in position provides stiffest damping force and turning out the adjuster will soften damping force. Count the number of clicks from the fully turned-in position. The rebound damping force is set on 14 clicks at the factory.

⚠WARNING

Improper servicing of the rear shock absorber assembly is hazardous. The rear shock contains high pressure nitrogen gas and can explode if improperly disassembled or disposed of.

Service or disposal should only be done by your authorized Suzuki dealer or a qualified mechanic.

BREAK-IN AND INSPECTION BEFORE RIDING

BREAK-IN 4-2
INSPECTION BEFORE RIDING 4-3

4

BREAK-IN AND INSPECTION BEFORE RIDING

BREAK-IN

The first 800 km (500 miles) is the most important in the life of your motorcycle. Proper operation during this break-in period will help assure maximum life and performance from your new motorcycle. The following guidelines explain proper break-in procedures.

Maximum Throttle Operation Recommendation

The table below shows the maximum throttle operation during the break-in period.

Initial	800 km (500 miles)	Less than 1/2 throttle
Up to	1600 km (1000 miles)	Less than 3/4 throttle

Vary the Engine Speed

Vary the engine speed during the break-in period. This allows the parts to "load" (aiding the mating process) and then "unload" (allowing the parts to cool). Although it is essential to place some stress on the engine components during break-in, you must be careful not to load the engine too much.

Allow the Engine Oil to Circulate before Riding

Allow enough idling time after warm or cold engine start-up before revving the engine or placing the transmission in gear. This allows time for the lubricating oil to reach all critical engine components.

Observe Your Initial and Most Critical Service

The initial service (break-in maintenance) is the most important service your motorcycle will receive. During break-in operation, all of the engine components will have mated together and seated. Maintenance required as part of the initial service includes correction of all adjustments tightening of all fasteners and replacement of dirty oil. Timely performance of this service will help make sure you get the best service life and performance from the engine.

INSPECTION BEFORE RIDING

⚠WARNING

Failure to inspect and maintain your motorcycle properly increases the chance of an accident or equipment damage.

Always perform a pre-ride inspection before each ride. Refer to the table on page 4-4 for check items. For further details, refer to the INSPECTION AND MAINTENANCE section.

⚠WARNING

Using worn, improperly inflated, or incorrect tires will reduce stability and can cause an accident.

Follow all instructions in the TIRES section in this owner's manual.

Check the condition of the motorcycle to help make sure that you do not have mechanical problems or get stranded somewhere when you ride. Before riding the motorcycle, be sure to check the following items. Be sure your motorcycle is in good condition for the personal safety of the rider and protection of the motorcycle.

⚠WARNING

Checking maintenance items when the engine is running can be hazardous. You could be severely injured if your hands or clothing gets caught in moving parts.

Shut the engine off when performing maintenance checks, except when checking the engine stop switch and throttle.

WHAT TO CHECK	CHECK FOR
Steering	• Smoothness • No restriction of movement • No play or looseness
Brakes	• Correct fluid level • No fluid leakage • No "sponginess" • Proper pedal and lever play • Brake pad wear
Tires	• Proper pressure • Enough tread depth • No cracks, rips, or other damage
Fuel tank	Tank cap locked securely
Lighting	Proper operation of all lights – Headlight, Taillight, Brake light, Instrument light, Turn signals
Horn	Correct function
Engine stop switch	Proper operation
Engine oil	Correct level
Cooling system	• Enough coolant in radiator • No leaks or damage
Throttle	• Proper play • Smooth response • Quick return to idle position
Gearshift lever	• No damage • Smooth operation
Drive chain	• Proper tension • Adequate lubrication • No excessive wear or damage
Side stand/ Ignition interlock switch	Proper operation
General condition	• Bolts and nuts tightness • No rattle from any parts of machine with the engine running • No visible evidence of damage

RIDING TIPS

STARTING THE ENGINE 5-2
STARTING OFF AND SHIFTING 5-3
USING THE TRANSMISSION 5-4
RIDING ON HILLS 5-5
STOPPING AND PARKING 5-6
CARRYING A PASSENGER 5-7

5

STARTING THE ENGINE

Before attempting to start the engine, make sure:

1. The transmission is in neutral.
2. The fuel valve is in the "ON" position.
3. The engine stop switch is in the "⟳" position.

NOTE: This motorcycle is equipped with interlock switches for the ignition circuit and the starter circuit. The engine can only be started if:

- *The transmission is in neutral and the clutch is disengaged, or*
- *The transmission is in gear, the side stand is fully up and the clutch is disengaged.*

When the Engine is Cold:

1. Pull the choke knob all the way up (full choke position).
2. **With the throttle grip in the fully closed position**, push the electric starter button.
3. Immediately after the engine starts, keep the engine speed at 1800 – 2000 r/min by varying the choke knob position.
4. Move the choke knob to the "OFF" position approximately 30 seconds after engine starts. It may be necessary to use the choke longer than 30 seconds in extremely cold weather.

When a cold Engine is Hard to Start:

1. Pull the choke knob all the wa up (full choke position).
2. **With the throttle grip opene 1/8 to 1/4**, push the electri starter button.
3. Immediately after the engin starts, keep the engine spee at 1800 – 2000 r/min by vary ing the choke knob position.
4. Move the choke knob to th "OFF" position approximatel 30 seconds after engine starts It may be necessary to use th choke longer than 30 second in extremely cold weather.

When the Engine is Warm:

1. Confirm that the choke knob i in the "OFF" position.
2. **With the throttle grip in th fully closed position**, pus the electric starter button.

NOTE: Operation of the carbure tor choke system is not necessa when the engine is warm.

When a Warm Engine is Hard to Start:

1. Confirm that the choke knob in the "OFF" position.
2. **With the throttle grip opene 1/8 to 1/4**, push the electr starter button.

⚠WARNING

Running the engine indoors or in a garage can be hazardous. Exhaust gas contains carbon monoxide, a gas that is colorless and odorless and can cause death or severe injury.

Only run the engine outdoors where there is fresh air.

CAUTION

Running the engine too long without riding may cause the engine to overheat. Overheating can result in damage to internal engine components and discoloration of exhaust pipes.

Shut the engine off if you cannot begin your ride promptly.

STARTING OFF AND SHIFTING

⚠WARNING

Riding this motorcycle at excessive speed increases your chances of losing control of the motorcycle. This may result in an accident.

Always ride within the limits of your skills, your motorcycle, and the riding conditions.

⚠WARNING

Removing your hands from the handlebars or feet from the footrests during operation can be hazardous. If you remove even one hand or foot from the motorcycle, you can reduce your ability to control the motorcycle.

Always keep both hands on the handlebars and both feet on the footrests of your motorcycle during operation.

⚠WARNING

Sudden side winds, which can occur when being passed by larger vehicles, at tunnel exits or in hilly areas, can upset your control.

Reduce your speed and be alert to side winds.

Make sure that the side stand is in the fully up position. Pull the clutch lever in and pause momentarily. Engage first gear by depressing the gearshift lever downward. Turn the throttle grip toward you and at the same time release the clutch lever gently and smoothly. As the clutch engages, the motorcycle will start moving forward. To shift to the next higher gear, accelerate gently, then close the throttle and pull the clutch lever in simultaneously. Lift the gear shift lever upward to select the next gear and release the clutch lever as you open the throttle again. Select higher gears in this manner until top gear is reached.

NOTE: This motorcycle is equipped with a side stand/ignition interlock switch. If you shift the transmission into gear when the side stand is down, the engine will stop running.

USING THE TRANSMISSION

The transmission is provided t keep the engine operatin smoothly in its normal operatin speed range. The gear ratio have been carefully chosen t meet the characteristics of th engine. The rider should alway select the most suitable gear fo the prevailing conditions. Neve slip the clutch to control roa speed, but rather downshift t allow the engine to run within it normal operational range.

The table below shows the shift ing point for each gear.

Shifting up schedule

Gear position	km/h	miles/h
1st → 2nd	20	12
2nd → 3rd	30	19
3rd → 4th	40	25
4th → 5th	50	31

Shifting down schedule

Gear position	km/h	miles/h
5th → 4th	35	22
4th → 3rd	25	16
3rd → 2nd	20	12

Disengage the clutch when th motorcycle speed drops below 1 km/h (9 miles/h).

⚠WARNING

Downshifting when engine speed is too high can:

- **cause the rear wheel to skid and lose traction due to increased engine braking, resulting in an accident; or**
- **force the engine to overrev in the lower gear, resulting in engine damage.**

Reduce speed before downshifting.

⚠WARNING

Downshifting while the motorcycle is leaned over in a corner may cause rear wheel skid and loss of control.

Reduce your speed and downshift before entering a corner.

RIDING ON HILLS

- When climbing steep hills, the motorcycle may begin to slow down and show lack of power. At this point you should shift to a lower gear so that the engine will again be operating in its normal power range. Shift rapidly to prevent the motorcycle from losing momentum.
- When riding down a steep hill, the engine may be used for braking by shifting to a lower gear.
- Be careful, however, not to allow the engine to overrev.

STOPPING AND PARKING

1. Twist the throttle grip away from you to close the throttle completely.
2. Apply the front and rear brakes evenly and at the same time.
3. Downshift through the gears as motorcycle speed decreases.
4. Select neutral with the clutch lever squeezed toward the grip (disengaged position) just before the motorcycle stops. The neutral position can be confirmed by observing the neutral indicator light.

⚠WARNING

Inexperienced riders tend to underutilize the front brake. This can cause excessive stopping distance and lead to a collision. Using only the front or rear brake can cause skidding and loss of control.

Apply both brakes evenly and at the same time.

⚠WARNING

Hard braking while turning may cause wheel skid and loss of control.

Brake before you begin to turn.

⚠WARNING

Hard braking on wet, loose, rough, or other slippery surfaces can cause wheel skid and loss of control.

Brake lightly and with care on slippery or irregular surfaces.

⚠WARNING

Following another vehicle too closely can lead to a collision. As vehicle speeds increase, stopping distance increases progressively.

Be sure you have a safe stopping distance between you and the vehicle in front of you.

5. Park the motorcycle on a firm flat surface, where it will not fal over.
6. Turn the ignition key to the "OFF" position.
7. Remove the keys.
8. Turn the handlebars all the way to the left and lock the steering for security.

⚠WARNING

A hot muffler can burn you. The muffler will be hot enough to burn you for some time after stopping the engine.

Park the motorcycle where pedestrians or children are not likely to touch the muffler.

CARRYING A PASSENGER

Before you invite someone to be a passenger on your motorcycle, you need to be thoroughly familiar with motorcycle operation. Adjust tire pressures and suspension according to the Tire Pressure and Loading section and the Suspension section of this manual.

The passenger should always hold onto your waist or hips, or onto the seat strap or grab bar, as equipped. Ask your passenger not to make any sudden movements. When you lean going around a corner, the passenger should lean with you. The passenger should always keep his or her feet on the footrests, even when you are stopped at a light.

To help prevent burn injuries, warn your passenger not to contact the muffler when mounting or dismounting your motorcycle.

Although your Dual Sport motorcycle is equipped to carry a passenger, carrying a passenger or cargo while riding in rough terrain could be hazardous. Carrying a passenger or strapping cargo to the passenger seat can greatly reduce your ability to balance and steer the motorcycle and deal with quickly changing off-road conditions. Ride at a reduced speed and limit your off-road riding to smooth, level surfaces when carrying a passenger or cargo.

⚠WARNING

Carrying a passenger or attaching cargo to the seat can greatly reduce your ability to balance and steer this motorcycle on rough terrain. You may need the full length of the seat to change position to maneuver the motorcycle and deal with quickly changing off-road conditions, and a passenger or cargo may interfare with your movement. If you lose control of the motorcycle, both you and the passenger can be saverely injured.

Never carry a passenger or cargo on the seat when riding on rough terrain. Reduce your speed and avoid uneven surfaces, hills, narrow trails, and other rough terrain when you carry a passenger or cargo off-road.

ACCESSORY USE AND MOTORCYCLE LOADING

MODIFICATION 6-4

6

ACCESSORY USE AND MOTORCYCLE LOADING

There are a great variety of accessories available to Suzuki owners. Suzuki can not have direct control over the quality or suitability of accessories you may wish to purchase. The addition of unsuitable accessories can lead to unsafe operating conditions. It is not possible for Suzuki to test each accessory on the market or combinations of all the available accessories; however, your dealer can assist you in selecting quality accessories and installing them correctly.

Use extreme caution when selecting and installing the accessories for your Suzuki. We have developed some general guidelines which will aid you when deciding whether, and how to equip your motorcycle.

⚠WARNING

Improper accessories or modifications can make your motorcycle unsafe and can lead to an accident.

Never modify the motorcycle with improper or poorly installed accessories. Follow all instructions in this owner's manual regarding accessories and modifications. Use genuine SUZUKI accessories or equivalent that have been designed and tested for your motorcycle. Consult your SUZUKI dealer if you have any questions.

1. Never exceed the GVWR (Gross Vehicle Weight Rating) of this motorcycle. The GVWR is the combined weight of the machine, accessories, payload and riders. When selecting your accessories, keep in mind the weight of the riders as well as the weight of the accessories. The additional weight of the accessories may not only create an unsafe riding condition but may also affect the steering ease.

GVWR:750 lbs (340 kg) at the tire pressure (cold)
Front: 25 psi (1.75 kgf/cm²)
Rear: 33 psi (2.25 kgf/cm²)

2. Any time that additional weight or aerodynamic affecting accessories are installed, they should be mounted as low as possible, as close to the motorcycle and as near the center of gravity as is feasible. The mounting brackets and other attachment hardware should be carefully checked to ensure that they provide for a rigid mount.Weak mounts can allow the shifting of the weight and create a hazardous, unstable condition.
3. Inspect for proper ground clearance and bank angle. Improperly mounted load could critically reduce these two safety factors. Also determine that the load does not interfere with the operation of the suspension, steering or other control operations.
4. Accessories fitted to the handlebars or the front fork area can create serious stability problems. This extra weight will cause the motorcycle to be less responsive to your steering control. The weight may also cause oscillations in the front end and lead to instability problems. Accessories added to the handlebars or front fork of the machine should be as light as possible and kept to a minimum.
5. Backrests, saddlebags, travel trunks, etc., may affect the stability of the motorcycle due to their aerodynamic effects. The motorcycle may be affected by a lifting condition or by an instability in cross winds or when being passed by or passing large vehicles. Improperly mounted or poorly designed accessories can result in an unsafe riding condition, therefore caution should be used when selecting and installing all accessories.
6. Certain accessories displace the rider from his or her normal riding position. This limits the freedom of movement of the rider and may limit control ability.
7. Additional electrical accessories may overload the existing electrical system. Severe overloads may damage the wiring harness or create a hazardous situation due to the loss of electrical power during the operation of the motorcycle.

When carrying a load on the motorcycle, mount it as low as possible and as close as possible to the machine. An improperly mounted load can create a high center of gravity which is very hazardous and makes the motorcycle difficult to handle. The size of the load can also affect the aerodynamics of the motorcycle. Balance the load between the left and right sides of the motorcycle and fasten it securely.

⚠ WARNING

Carrying a passenger or attaching cargo to the seat can greatly reduce your ability to balance and steer this motorcycle on rough terrain. You may need the full length of the seat to change position to maneuver the motorcycle and deal with quickly changing off-road conditions, and a passenger or cargo may interfere with your movement. If you lose control of the motorcycle, both you and the passenger can be severely injured.

Never carry a passenger or cargo on the seat when riding on rough terrain. Reduce your speed and avoid uneven surfaces, hills, narrow trails, and other rough terrain when you carry a passenger or cargo off-road.

MODIFICATION

Modification of the motorcycle, or removal of original equipment may render the vehicle unsafe or illegal. Obey all applicable equipment regulations in your area.

INSPECTION AND MAINTENANCE

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MAINTENANCE SCHEDULE 7-2
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INSPECTION AND MAINTENANCE

NOTICE

MAINTENANCE, REPLACEMENT OR REPAIR OF THE EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY MOTORCYCLE REPAIR ESTABLISHMENT OR INDIVIDUAL USING ANY MOTORCYCLE PART WHICH HAS BEEN CERTIFIED UNDER THE PROVISIONS IN THE CLEAN AIR ACT Sec. 207 (a)(2).

MAINTENANCE SCHEDULE

It is very important to inspect and maintain your motorcycle regularly. Follow the guidelines in the chart. The intervals between periodic services in hours are shown At the end of each interval, be sure to perform the maintenance listed.

⚠WARNING

Improper maintenance or failure to perform recommended maintenance increases the chance of an accident or motorcycle damage.

Always follow the inspection and maintenance recommendations and schedules in this owner's manual. Ask your SUZUKI dealer or a qualified mechanic to do the maintenance items marked with an asterisk (*). You may perform the unmarked maintenance items by referring to the instructions in this section, if you have mechanical experience. If you are not sure how to do any of the jobs, have your SUZUKI dealer or a qualified mechanic do them.

⚠WARNING

Running the engine indoors or in a garage can be hazardous. Exhaust gas contains carbon monoxide, a gas that is colorless and odorless and can cause death or severe injury.

Only run the engine outdoors where there is fresh air.

NOTE: The MAINTENANCE CHART specifies the minimum requirements for maintenance. If you use your motorcycle under severe conditions, perform maintenance more often than shown in the chart. If you have any questions regarding maintenance intervals, consult your SUZUKI dealer or a qualified mechanic.

CAUTION

Using poor quality replacement parts can cause your motorcycle to wear more quickly and may shorten its useful life.

Use only genuine Suzuki replacement parts or their equivalent.

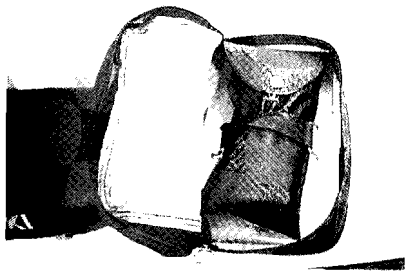
MAINTENANCE CHART

Item \ Interval	km	1000	6000	12000	18000	24000
	miles	600	4000	7500	11000	14500
	months	2	12	24	36	48
Air cleaner element		–	I	I	R	I
* Exhaust pipe bolts and muffler bolts		T	–	T		T
* Valve clearance		–	–	–		I
Spark plug		–	I	R	I	R
Spark arrester		–	C	C	C	C
Fuel line		–	I	I	I	I
		Replace every 4 years				
Engine oil		R	R	R	R	R
Engine oil filter		R	–		R	–
Engine oil hoses		I	I	I	I	I
* Engine coolant		Replace every 2 years				
Radiator hose		–	I	I	I	I
Idle speed (Carburetor)		I	I	I	I	I
Throttle cable play (Carburetor)		I	I	I	I	I
Clutch		–	I	I	I	I
Drive chain		I	I	I	I	I
		Lubricate every 1000 km (600 miles)				
* Brakes		I	I	I	I	I
Brake hose		–	I	I	I	I
		* Replace every 4 years				
Brake fluid		–	I	I	I	I
		* Replace every 2 years				
Tires		–	I	I	I	I
Spoke nipples		I	I	I	I	I
* Steering		I	–	I	–	I
* Front fork		–	–	I	–	I
* Rear suspension		–	–	I	–	I
* Chassis nuts and bolts		T	T	T	T	T
Vapor hose (California model only)		Inspect every 12000 km (7500 miles) Replace vapor hose every 4 years				
Canister (California model only)		Inspect every 12000 km (7500 miles)				
* PAIR (Air supply) system		–	–	I	–	I

NOTE: NOTE: I= Inspect and clean, adjust, replace or lubricate as nec essary, R= Replace, T= Tighten, C= Clean

NOTE: (California model only) and (CA. ONLY) means that the items o the maintenance interval is to be applied only for the California model.

TOOLS



A tool kit is supplied.

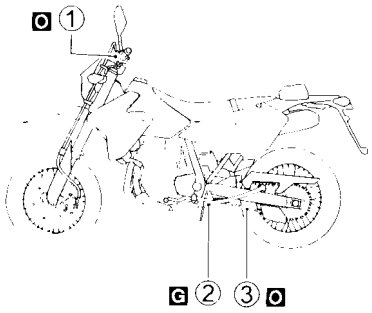
GENERAL LUBRICATION

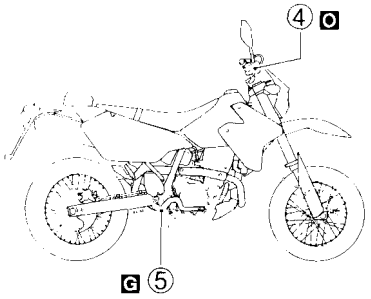
Proper lubrication is important for safe, smooth operation and a long life for your motorcycle. Be sure that all lubrication is performed during periodic maintenance on the motorcycle. Increase frequency when you use your motorcycle in severe conditions.

CAUTION

Lubricating switches can damage the switches.

Do not apply grease and oil to the switches.



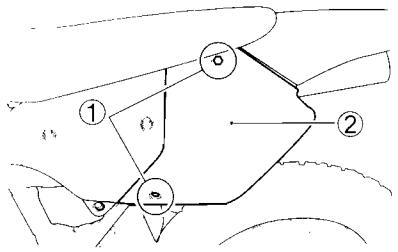


O... Motor oil
G... Grease

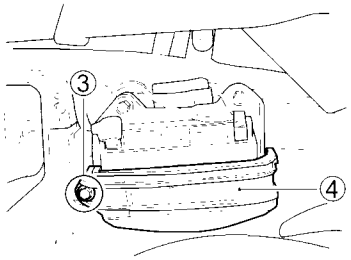
1 ... Clutch lever holder
2 ... Side stand pivot and spring hook
3 ... Drive chain
4 ... Brake lever holder
5 ... Brake pedal pivot

BATTERY

To remove the battery, follow the procedure below.



1. Loosen the bolts (1) and remove the frame cover (2).



2. Loosen the bolt (3) and remove the battery cover (4).

⚠WARNING

Battery posts, terminals, and related accessories contain lead and lead compounds.

Wash hands after handling.

⚠WARNING

Hydrogen gas produced by batteries can explode if exposed to flames or sparks.

Keep flames and sparks away from the battery. Never smoke when working near the battery.

The battery is a sealed type battery and requires no maintenance. The standard charging rate is 0.7A × 5 to 10 hours.

CAUTION

Exceeding the standard charging rate for the battery can shorten its life.

Never exceed the standard charging rate.

CAUTION

Reversing the battery lead wires can damage the charging system and the battery.

The red lead must go to the positive (+) terminal and the black (or black with white tracer) lead must go to the negative (–) terminal.

AIR CLEANER

The air cleaner element must be kept clean to provide good engine power and gas mileage. If you use your motorcycle under normal low-stress conditions, you should service the air cleaner at the intervals specified. If you ride in dusty, wet, or muddy conditions, you will need to inspect the air cleaner element much more frequently. Use the following procedure to remove the element and inspect it.

⚠WARNING

Operating the engine without the air cleaner element in place could allow a flame to spit back from the engine to the air cleaner, or could allow dirt to enter the engine. This could cause a fire or severe engine damage.

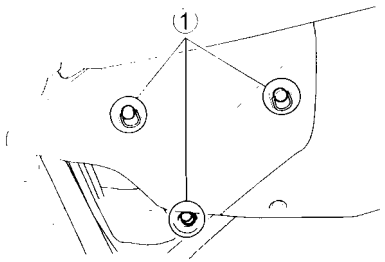
Never run the engine without the air cleaner element properly installed.

CAUTION

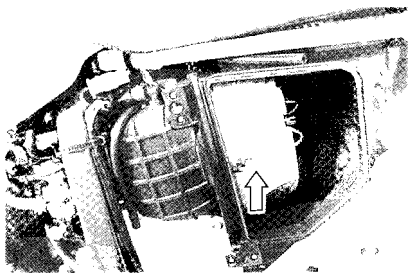
Clean or replace the air cleaner element frequently if the motorcycle is used in dusty, wet or muddy conditions. The air cleaner element will clog under these conditions, and this may cause engine damage, poor performance, and poor fuel economy.

Clean the air cleaner case and element immediately if water gets in the air cleaner box.

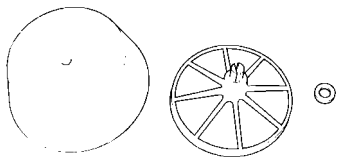
Removing the Element



1. Remove the quick release bolts (1) and left side frame cover.

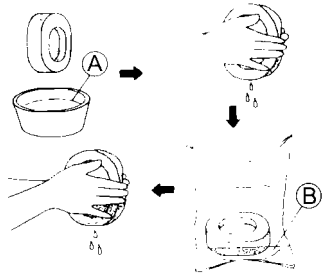


2. Unhook the hook and remove the element assembly.



3. Separate the polyurethane foam element from the element frame.

Washing the Element



Wash the element as follows:

1. Fill a wash pan larger than the element with a non-flammable cleaning solvent (A). Dip the element in the solvent and wash it.
2. Squeeze the element by pressing it between the palms of both hands to remove the excess solvent. Do not twist or wring the element, or it will develop cracks.
3. Dry the element.
4. Put the element in a plastic bag. Pour in some air filter oil (B) and work the oil into the element.
5. Squeeze the element to remove excess oil.

CAUTION

A torn air cleaner element will allow dirt to enter the engine and can damage the engine.

Carefully examine the air cleaner element for tears during cleaning. Replace it with a new one if it is torn.

6. Clean any dirt or debris from inside the air cleaner case. Be sure no dirt enters the carburetor.
7. Reinstall the cleaner element in reverse order of removal. Be sure that the element is securely in position and is properly sealed.

⚠WARNING

New and used oil and solvent can be hazardous. Children and pets may be harmed by swallowing new or used oil or solvent. Repeated, prolonged contact with used engine oil may cause skin cancer. Brief contact with used oil or solvent may irritate skin.

- **Keep new and used oil and solvent away from children and pets.**
- **Wear a long-sleeve shirt and waterproof gloves.**
- **Wash with soap if oil or solvent contacts your skin.**

NOTE: Recycle or properly dispose of used oil and solvent.

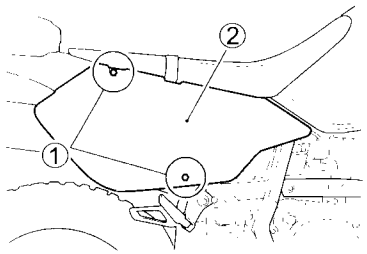
CAUTION

Failure to position the air cleaner element properly can allow dirt to bypass the air cleaner element. This will cause engine damage.

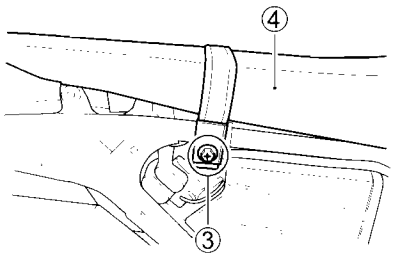
Be sure to properly install the air cleaner element.

SPARK PLUG

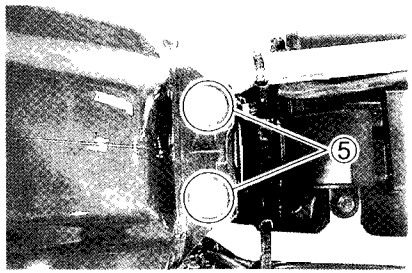
To remove the spark plug, follow the procedure below.



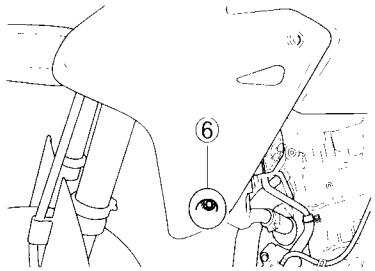
1. Loosen the bolts ① on the right and left frame covers and remove the frame cover ②.



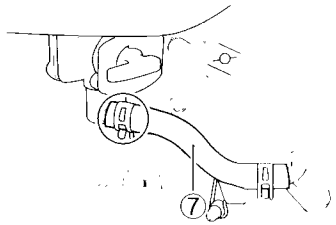
2. Loosen the bolts ③ (right and left) and remove the seat ④.



3. Loosen the bolts ⑤.



4. Loosen the screws ⑥ (right and left.)



5. Turn the fuel valve to the "ON" or "RES" position.
6. Disconnect the fuel hose ⑦.

⚠WARNING

Fuel spilled from the fuel hose can catch on fire.

Stop the engine before disconnecting the fuel hose. Keep flames, sparks, and heat sources away. Do not smoke. Catch fuel in a container and dispose of drained fuel properly.

7. Remove the fuel tank by pulling it backward.

8. Pull off the spark plug cap.
9. Remove the spark plug with the spark plug wrench provided in the tool kit.

Your motorcycle comes equipped with DENSO U24ESR-N or NGK CR8E spark plug. To determine if the standard spark plug is right for your usage, check the color of the plug's porcelain center electrode insulator after motorcycle operation. A light brown color indicates that the plug is correct. A white or dark insulator indicates that the engine may need adjustment, or another plug type may be needed. Consult your Suzuki dealer or a qualified mechanic if your plug insulator is not a light brown color.

CAUTION

An improper spark plug may have an incorrect fit or heat range for your engine. This may cause severe engine damage which will not be covered under warranty.

Use one of the spark plugs listed in the table or equivalent. Consult your Suzuki dealer or a qualified mechanic if you are not sure which spark plug is correct for your type of usage.

NGK	DENSO	REMARKS
CR7E	U22ESR-N	If the standard plug tends to run cold
CR8E	U24ESR-N	Standard
CR9E	U27ESR-N	If the standard plug tends to run cold.

NOTE: If the above-named plugs are not available, consult your Suzuki dealer.

NOTE: This motorcycle uses resistor-type spark plug to avoid jamming electronic parts. Improper spark plug selection may cause electronic interference with your motorcycle's ignition system, resulting in motorcycle performance problems. Use only the recommended spark plugs.

To install a spark plug, turn it in as far as possible with your fingers, then tighten it with a wrench.

CAUTION

A crossthreaded or overtightened spark plug will damage the aluminum threads of the cylinder head.

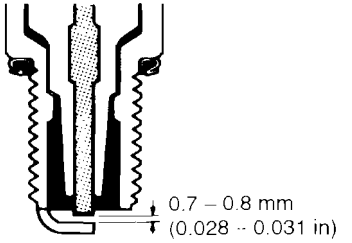
Follow the procedure below to tighten the spark plug properly.

Carefully turn the spark plug by hand into the threads until it is finger tight. If the spark plug is new, tighten it with a wrench about 1/2 turn past finger tight.If you are reusing the old spark plug, tighten it with a wrench about 1/8 turn past finger tight.

CAUTION

Dirt can damage your engine if it enters an open spark plug hole.

Cover the spark plug hole whenever the spark plug is removed.



To maintain a hot, strong spark, keep the plug free from carbon. Remove the carbon deposits periodically from the spark plug. Adjust the gap to 0.7 – 0.8 mm (0.028 – 0.031 in) for good ignition. Use a thickness (feeler) gauge to check the gap.

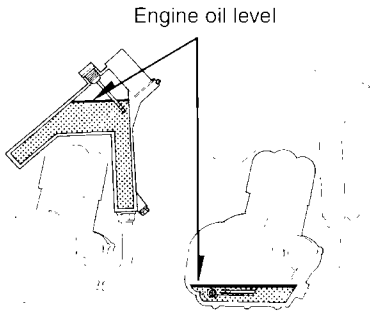
NOTE: Fit the spark plug dust cover securely to keep the spark plug clean and dry.

ENGINE OIL

Engine life depends on oil amount and quality. Daily oil level checks and periodic changes are two of the most important maintenance items to be performed.

Oil Level Check

Check the engine oil level with the engine oil dipstick. The dipstick comes out together with the oil filler cap. The level on the dipstick should be between the "L" (low) and the "F" (full) lines.

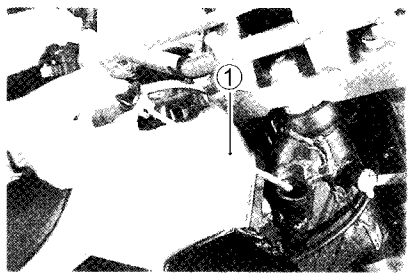


When the engine has just been run

When the engine has been off for a week

The oil is pumped up to the oil tank while the engine is running. The engine oil tank of this motorcycle is located at the upper part of the frame. The engine oil in the frame oil tank decreases when the engine is left unused. The engine oil in the frame oil tank drips to the crankcase. To check the oil level, follow the procedure below:

1. Place the motorcycle on level ground on the side stand.
2. Start the engine and allow it to idle for three minutes.
3. Stop the engine and wait three minutes.



4. Remove the oil filler cap. The engine oil dipstick (1) comes out together with the oil filler cap.
5. Wipe the oil from the dipstick with a clean rag.
6. Holding the motorcycle vertically, reinsert the dipstick until the threads touch filler neck, but do not screw the cap in.

7. Draw out the dipstick and check the oil level. The level found on the dipstick should be between the "L" (low) and the "F" (full) lines. If the oil level is below the "L" line, add fresh oil from the filler hole until the oil level reaches to the "F" line.

NOTE: Engine oil expands and oil level increases when the engine oil is hot. Check and adjust engine oil level when the engine oil is not hot.

CAUTION

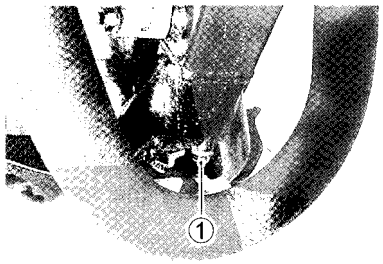
The engine oil level must be between the "L" (Low) line and "F" (Full) line, or engine damage may occur.

Check the oil level with the dipstick, with the motorcycle held vertically on level ground before each use of the motorcycle.

Engine Oil and Filter Change

Change the engine oil and oil filter at the scheduled times. The engine should always be warm when the oil is changed so the oil will drain easily. The procedure is as follows:

1. Place the motorcycle on the side stand.
2. Remove the oil filler cap.

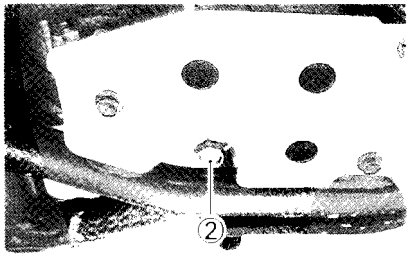


3. Remove the frame tube drain plug ① from the frame and drain the engine oil into a drain pan.

⚠WARNING

Engine oil and exhaust pipes can be hot enough to burn you.

Wait until the oil drain plug and exhaust pipes are cool enough to touch with bare hands before draining oil.



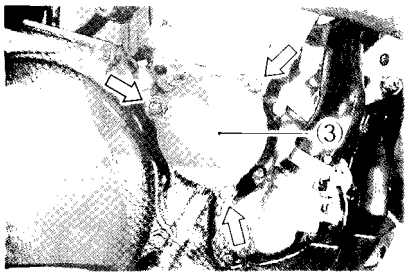
4. Remove the drain plug ② from the bottom of the engine and drain the engine oil into a drain pan.

⚠ WARNING

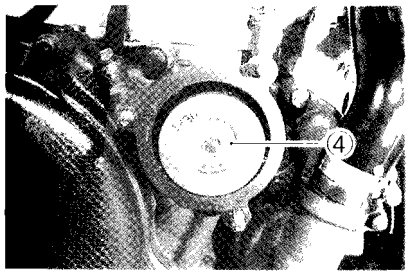
New and used oil can be hazardous. Children and pets may be harmed by swallowing new or used oil. Repeated, prolonged contact with used engine oil may cause skin cancer. Brief contact with used oil may irritate skin.

- **Keep new and used oil away from children and pets.**
- **Wear a long-sleeve shirt and waterproof gloves.**
- **Wash with soap if oil contacts your skin.**

NOTE: Recycle or properly dispose of used oil.



5. Remove the three bolts holding the filter cover ③ in place.



6. Remove the filter cover and pull out the old filter element ④. Insert the new filter in the same position.

CAUTION

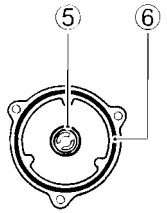
Using an oil filter with the wrong design can cause engine damage.

Use a genuine SUZUKI oil filter or an equivalent filter designed for your motorcycle.

CAUTION

Failure to insert the new element correctly can damage the engine. No oil flow will result if the element is inserted backwards.

Insert the open end of the new oil filter element into the engine.



7. Check to be sure that the filter spring ⑤ and the cap "O" ring ⑥ are installed correctly.

NOTE: Install a new "O" ring each time the filter element is replaced.

8. Reinstall the oil filter cover and tighten the nuts securely.
9. Reinstall the drain plug and tighten it securely. Pour about 1800 ml (1.9 US qt) of the specified oil in the filler hole. (See FUEL AND OIL RECOMMENDATION section.)

CAUTION

Engine damage may occur if you use oil that does not meet Suzuki's specifications.

Use the oil specified in the FUEL AND OIL RECOMMENDATION section.

10. Start the engine (while the motorcycle is outside on level ground) and allow it to idle for a few minutes.
11. Turn the engine off and wait approximately one minute. Recheck the oil level according to oil level check procedure. Inspect the area around the drain plug and oil filter cover for leaks.

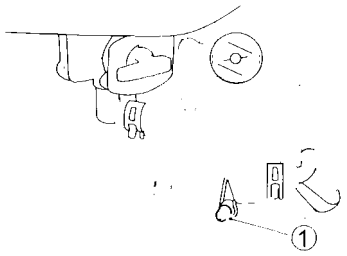
CARBURETOR

The carburetor is factory set for the best performance. Do not attempt to alter its setting. There are two items of adjustment, however, under your care: idle speed and throttle cable play.

Idle Speed Adjustment

To adjust the engine idle speed properly, you need a tachometer. If you do not have one, ask your Suzuki dealer or a qualified mechanic to perform this adjustment.

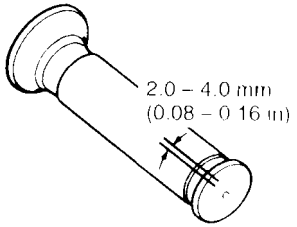
To adjust the idle speed:



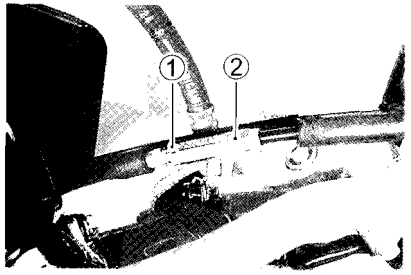
1. Start the engine and warm it up by running 2000 r/min for 10 minutes in summer (where ambient temperature is 30°C (86°F) or thereabout) or for 20 minutes in winter (where ambient temperature is down to -5°C (23°F) or thereabout).
2. Turn the throttle stop screw ① in or out so that the engine idles at 1400 – 1600 r/min.

Throttle Cable Adjustment

Measure the throttle cable play by turning the throttle grip. The throttle grip should have 2.0 – 4.0 mm (0.08 – 0.16 in) play.



To adjust the throttle cable play:



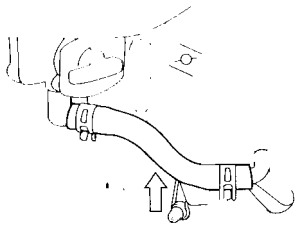
1. Loosen the lock nut ①.
2. Turn the adjuster ② in or out to obtain the correct play.
3. Tighten the lock nut ①.
4. Recheck the throttle cable play. Readjust it if it is not within the correct limits.

⚠WARNING

Inadequate throttle cable play can cause engine speed to rise suddenly when you turn the handlebars. This can lead to loss of rider control.

Adjust the throttle cable play so that engine idle speed does not rise due to handlebar movement.

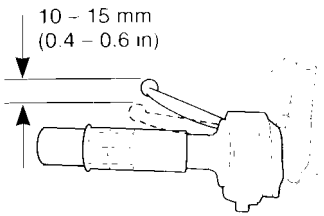
FUEL HOSE

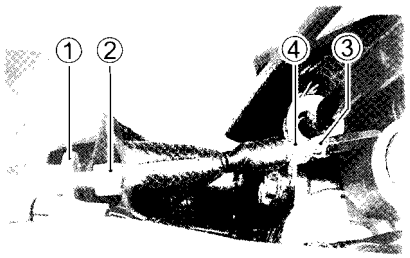


Inspect the fuel hose for damage and fuel leakage. If any defects are found, the fuel hose must be replaced.

CLUTCH ADJUSTMENT

Clutch cable play should be 10 – 15 mm (0.4 – 0.6 in) measured at the clutch lever end. Adjust clutch cable play according to the following procedure:





Minor Adjustment

1. Loosen the clutch cable adjuster lock nut ①.
2. Turn the clutch cable adjuster ② to provide the specified play.
3. Tighten the lock nut ①.

Major Adjustment

1. Loosen the clutch cable adjuster lock nut ③.
2. Turn the clutch cable adjuster ④ to provide the specified play.
3. Tighten the lock nut ③.

DRIVE CHAIN

This motorcycle has a continuous drive chain constructed from special materials. It does not use a master link. The drive chain has special "O" rings that permanently seal grease inside. We recommend that you take your motorcycle to an authorized Suzuki dealer if the drive chain needs to be replaced. The condition and adjustment of the drive chain should be checked before each use of the motorcycle. Always follow the guidelines below for inspecting and servicing the chain.

⚠WARNING

Riding with the chain in poor condition or improperly adjusted can lead to an accident.

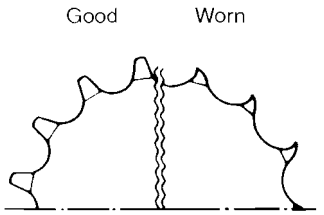
Inspect, adjust, and maintain the chain properly before each ride, according to this section.

Inspecting the Drive Chain

When inspecting the chain, look for the following:

- Loose pins
- Damaged rollers
- Dry or rusted links
- Kinked or binding links
- Excessive wear
- Improper chain adjustment

If you find anything wrong with the drive chain condition or adjustment, correct the problem if you know how. If necessary, consult your authorized Suzuki dealer.



Damage to the drive chain means that the sprockets may also be damaged. Inspect the sprockets for the following:

- Excessively worn teeth
- Broken or damaged teeth
- Loose sprocket mounting nuts

NOTE: The two sprockets should be inspected for wear when a new chain is installed and replaced if necessary.

If you find any of these problems with your sprocket, consult your Suzuki dealer.

Drive Chain Cleaning and Oiling

Clean and oil the chain as follows:

1. Wash the chain with kerosene. Kerosene will lubricate and clean the chain.

⚠WARNING

Kerosene can be hazardous. Kerosene is flammable. Children or pets may be harmed from contact with kerosene.

Keep flames and smoking materials away from kerosene. Keep children and pets away from kerosene. If swallowed, do not induce vomiting. Call physician immediately. Dispose of used kerosene properly.

CAUTION

Cleaning the chain with gasoline or commercial cleaning solvents can damage O-rings and ruin the chain.

Clean the drive chain with kerosene only.

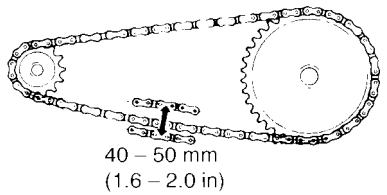
2. Allow the chain to dry, then lubricate the links with Suzuki chain lube or an equivalent lubricant.

CAUTION

Some drive chain lubricants contain solvents and additives which could damage the O-rings in your chain.

Use Suzuki chain lube or an equivalent chain lubricant that is specifically intended for use with O-ring chains.

Drive Chain Adjustment



Inspect the drive chain slack before each use of the motorcycle. The drive chain should be adjusted for 40 – 50 mm (1.6 – 2.0 in) of slack, as shown.

⚠WARNING

Too much chain slack can cause the chain to come off the sprockets, resulting in an accident or serious damage to the motorcycle.

Inspect and adjust the drive chain slack before each use.

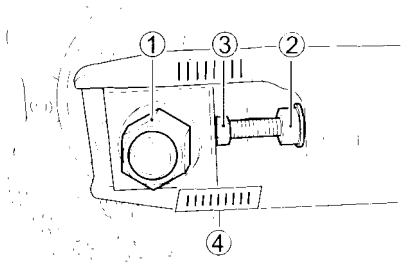
To adjust the drive chain, follow the procedure below:

⚠WARNING

A hot muffler can burn you. The muffler will be hot enough to burn you for some time after stopping the engine.

Wait until the muffler cools to avoid burns.

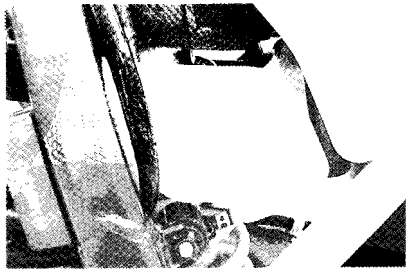
1. Place the motorcycle on the side stand.
2. Pull out the axle slider by referring to the REAR WHEEL REMOVAL section.



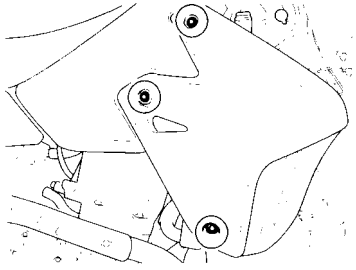
3. Loosen the axle nut ①.
4. Loosen the lock nut ② (right and left).
5. Turn the right and left adjuster bolts ③ until the chain has 40 – 50 mm (1.6 – 2.0 in) of slack halfway between the engine sprocket and rear sprocket.
6. At the same time that the chain is being adjusted, the rear sprocket must be kept in perfect alignment with the front sprocket. To assist you in performing this procedure, there are reference marks ④ on the swing arm and each chain adjuster which are to be aligned with each other and to be used as a reference from one side to the other.
7. Tighten the lock nut ② (right and left).
8. Tighten the axle nut ① securely.
9. Recheck the chain slack after tightening and readjust if necessary.

Rear axle nut tightening torque:
110 N·m (11.0 kgf-m, 79.5 lb-ft)

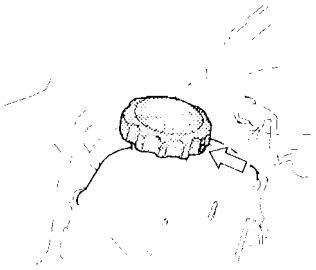
ENGINE COOLANT



The engine coolant in the radiator will overflow to coolant reservoir if the engine overheats. Overflowed engine coolant goes back to the radiator when the engine cools. If engine coolant remains in the engine coolant reservoir, replenish the radiator with specified engine coolant.



1. Remove the bolts and radiator cover.



2. Loosen the screw and turn the radiator cap counterclockwise and remove it.

⚠WARNING

You can be injured by scalding fluid or steam if you open the radiator cap when the engine is hot.

Do not open the radiator cap when the engine is hot. Wait until engine cools.

3. Replenish the radiator with specified engine coolant described in the FUEL, ENGINE OIL AND COOLANT RECOMMENDATION section. Engine coolant must be filled up to the bottom of the inlet hole.
4. Tighten the radiator cap securely, and then tighten the screw securely.

BRAKES

This motorcycle has front and rear disk brakes.

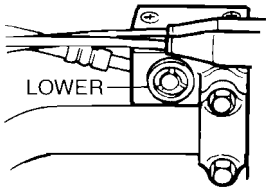
⚠WARNING

Failure to inspect and properly maintain the brakes increases your chance of having an accident.

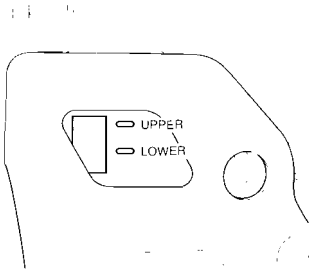
Inspect the brake system before each use according to the INSPECTION BEFORE RIDING section. Follow the MAINTENANCE SCHEDULE section to maintain your brake system.

NOTE: Operating in mud, water, sand or other extreme conditions can cause accelerated brake wear. If you operate your motorcycle under these conditions, the brakes must be inspected more often than recommended in the MAINTENANCE SCHEDULE.

Brake Fluid



FRONT



REAR

Check the brake fluid level in both the front and rear brake fluid reservoirs. If the level in either reservoir is below the lower mark, inspect for brake pad wear and leaks.

⚠WARNING

Brake fluid is harmful or fatal if swallowed, and harmful if it comes in contact with skin or eyes.

If swallowed, do not induce vomiting. Immediately contact a poison control center or a physician. If brake fluid gets in eyes, flush eyes with water and seek medical attention. Wash thoroughly after handling. Solution can be poisonous to animals.

Keep out of the reach of children and animals.

⚠WARNING

Failure to keep the brake fluid reservoir full with proper brake fluid can be hazardous. The brakes may not work correctly without the proper amount and type of brake fluid. This could lead to an accident.

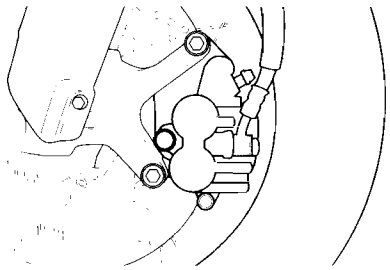
Inspect the brake fluid level before each use. Use only DOT4 brake fluid from a sealed container. Never use or mix different types of brake fluid. If there is frequent loss of fluid, take your motorcycle to a SUZUKI dealer or a qualified mechanic for inspection.

CAUTION

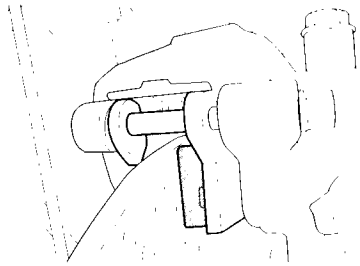
Spilled brake fluid can damage painted surfaces and plastic parts.

Avoid spilling any fluid when filling the reservoir. Wipe up spills immediately.

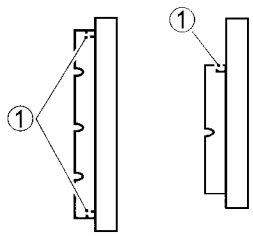
Brake Pads



FRONT



REAR



(1) Grooved wear limit line

Inspect the front and rear brake pads to see if they are worn down to the grooved wear limit line. If a front or rear pad is worn to the grooved limit line, both front or both rear pads must be replaced with new ones. After replacing either the front or rear brake pads, the brake lever or pedal must be pumped several times. This will extend the pads to their proper position.

⚠WARNING

Riding with worn brake pads will reduce braking performance and will increase your chance of having an accident.

Inspect brake pad wear before each use. Ask your SUZUKI dealer or a qualified mechanic to replace brake pads if any pad is worn to the limit.

⚠WARNING

Failure to extend brake pads after repair or replacement can cause poor braking performance and may result in an accident.

Before riding, "pump" the brake lever/pedal repeatedly until brake pads are pressed against the brake disks and proper lever/pedal stroke and firm feel are restored.

NOTE: Do not squeeze/depress the brake lever/pedal when the pads are not in their positions. It is difficult to push the pistons back into position.

⚠ WARNING

Replacing only one or the two brake pads can result in uneven braking action.

Replace both pads together.

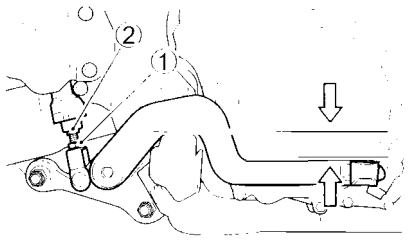
Rear Brake Pedal Adjustment

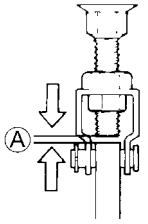
CAUTION

An incorrectly adjusted brake pedal may force brake pads to rub against the disk at all times, causing damage to the pads and disk.

Follow the steps in this section to adjust the brake pedal properly.

The rear brake pedal must be adjusted to set the clearance between the pedal and the footrest. Adjust the brake pedal as follows:





1. Loosen the lock nut (1).
2. Adjust the brake pedal height by turning adjuster (2) to locate the pedal 5 mm (0.2 in) below the top face of the footrest.
3. Check that the clearance of A is at least 0.5 mm (0.02 in).
4. Tighten the lock nut (1).

TIRES

⚠ WARNING

Failure to follow these warnings may result in an accident due to tire failure. The tires on your motorcycle form the crucial link between your motorcycle and the road.

Follow these instructions:

- **Check tire condition and pressure, and adjust pressure before each ride.**
- **Avoid overloading your motorcycle.**
- **Replace a tire when worn to the specified limit, or if you find damage such as cuts or cracks.**
- **Always use the size and type of tires specified in this owner's manual.**
- **Balance the wheel after tire installation.**
- **Read this section of the owner's manual carefully.**

Tire Pressure and Loading

Proper tire pressure and proper tire loading are important factors. Overloading your tires can lead to tire failure and loss of motorcycle control.

Check tire pressure each time before you ride, and adjust tire pressure according to the table below. Tire pressure should only be checked and adjusted before riding since riding will heat up the tires and lead to higher inflation pressure readings.

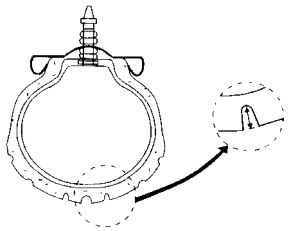
Under-inflated tires make smooth cornering difficult and can result in rapid wear. Over-inflated tires cause smaller amount of tire to be in contact with the ground, which can contribute to skidding and loss of control.

Cold tire inflation pressure

	SOLO RIDING	DUAL RIDING
FRONT	1.75 kgf/cm² 175 kPa 25 psi	1.75 kgf/cm 175 kPa 25 psi
REAR	2.00 kgf/cm 200 kPa 29 psi	2.25 kgf/cm 225 kPa 33 psi

Tire Condition and Type

Tire condition and tire type affect motorcycle performance. Cuts or cracks in the tires can lead to tire failure and loss of motorcycle control. Worn tires are susceptible to puncture failures and subsequent loss of motorcycle control. Tire wear also affects the tire profile, changing motorcycle handling characteristics.



Check the condition of your tires each time before you ride. Replace tires if tires show visual evidence of damage such as cracks or cuts, or if tread depth is less than 1.6 mm (0.06 in) front, 2.0 mm (0.08 in) rear.

NOTE: These wear limits will be reached before the wear bars molded into the tire make contact with the road.

When you replace a tire, be sure to replace it with a tire of the size and type listed below. If you use a different size or type of tire, motorcycle handling may be adversely affected, possibly resulting in loss of motorcycle control.

	FRONT	REAR
SIZE	120/70 R17 M/C 58H	140/70 R17 M/C 66H
TYPE	DUNLOP D208F SM	DUNLOP D208 SM

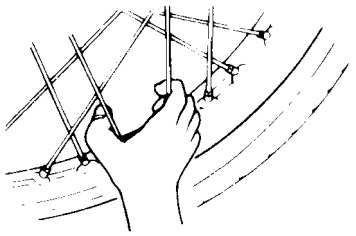
Always balance the wheel after repairing a puncture or replacing the tire. Proper wheel balance is important to avoid variable wheel-to-ground contact and to avoid uneven tire wear.

⚠WARNING

An improperly repaired, installed, or balanced tire can cause loss of control or shorten tire life.

- **Ask your SUZUKI dealer or a qualified mechanic to perform tire repair, replacement, and balancing because proper tools and experience are required.**
- **Install tires according to the rotation direction shown by arrows on the sidewall of each tire.**

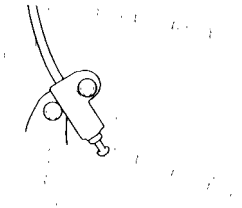
SPOKE NIPPLE TIGHTNESS



Check the tension to verify the tightness of the spoke nipples. The tension of the spokes can be checked by squeezing the spokes with your fingers. If a spoke nipple is loose, the spoke will bend more than the others. The tension can also be checked by hitting the spokes with a small metal bar. If the spoke nipple is loose, its sound will be dull.

To tighten the spoke nipples properly, tighten them equally to the specified torque. Loose and overtightened spoke nipples may cause unequal spoke tension and may result in wheel rim distortion. Contact your Suzuki dealer for this service.

SIDE STAND/IGNITION INTERLOCK SWITCH



Check the side stand/ignition interlock switch for proper operation as follows:

1. Sit on the motorcycle in the normal riding position, with the side stand up.
2. Shift into first gear, hold the clutch in, and start the engine.
3. While continuing to hold the clutch in, move the side stand to the down position.

If the engine stop running when the side stand is moved to the down position, then the side stand/ignition interlock switch is working properly. If the engine continues to run with the side stand down and the transmission in gear, then the side stand/ignition interlock switch is not working properly. Have your motorcycle inspected by an authorized Suzuki dealer or a qualified service mechanic.

⚠WARNING

If the side stand/ignition interlock system is not working properly, it is possible to ride the motorcycle with the side stand in the down position. This may interfere with rider control during a left turn.

Check the side stand/ignition interlock system for proper operation before riding. Check that the side stand is returned to its full up position before starting off.

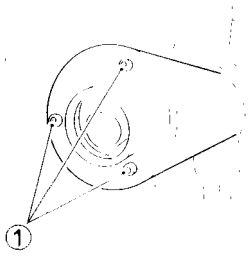
SPARK ARRESTER

The muffler has a spark arrester which must be periodically cleaned to maintain good efficiency. At the intervals shown in the maintenance chart, clean the spark arrester as follows.

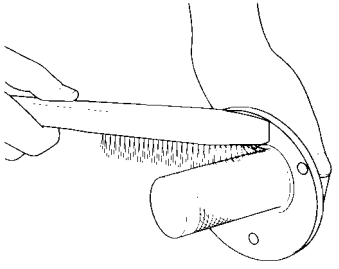
⚠WARNING

A hot muffler can burn you. The muffler will be hot enough to burn you for some time after stopping the engine.

Wait until the muffler cools to avoid burns.



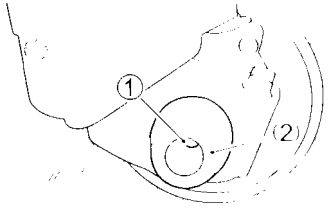
1. Remove the bolts (1) and spark arrester.

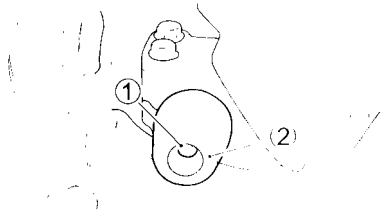


2. Use a brush to remove carbon deposits from the spark arrester screen. Be careful not to damage the spark arrester screen. Check that the screen has no holes or tears. Replace the screen if necessary.
3. Reinstall the spark arrester and tighten the bolts securely.

FRONT WHEEL REMOVAL

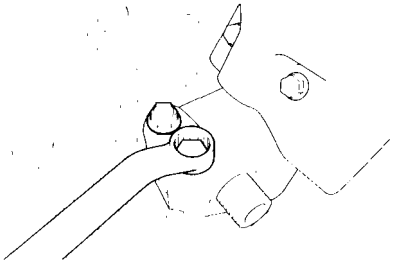
1. Place the motorcycle on the side stand.

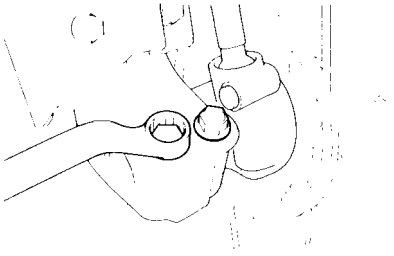




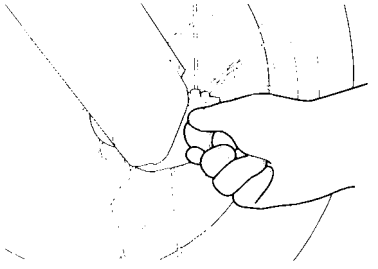
2. Remove the bolt (1). Pull out the axle slider (2).

3. Loosen the axle nut.

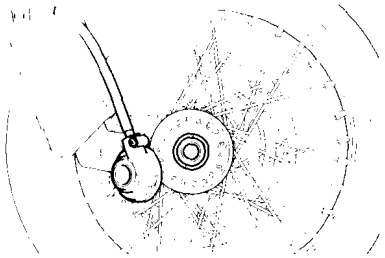




4. Loosen the axle holder bolts.
5. Lift the front end of the motorcycle up and place a jack or a block under the engine or chassis tubes.



6. Draw out the axle.



7. Slide the front wheel forward.

NOTE: Never squeeze the front brake lever with the front wheel removed. It is very difficult to force the pads back into the caliper assembly.

8. To reinstall the wheel assembly, reverse the sequence described above.
9. After installing the wheel, apply the brake several times to restore the proper lever stroke.

⚠WARNING

Failure to extend brake pads after installing the wheel can cause poor braking performance and may result in an accident.

Before riding, "pump" the brake repeatedly until the brake pads are pressed against the brake disks and proper lever/pedal stroke and firm feel are restored. Also check that the wheel rotates freely.

⚠WARNING

Failure to torque bolts and nuts properly could lead to an accident.

Torque bolts and nuts to the proper specifications. If you are not sure of the proper procedure, have your authorized SUZUKI dealer or a qualified mechanic do this.

Front axle nut tightening torque:
39 N·m (3.9 kgf-m, 28.0 lb-ft)

Front axle holder nuts tightening torque:
18 N·m (1.8 kgf-m, 13.0 lb-ft)

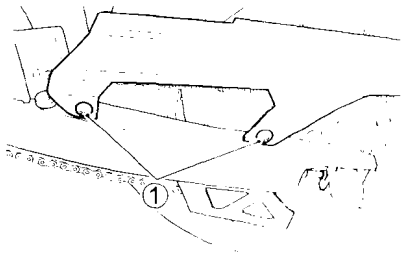
REAR WHEEL REMOVAL

⚠WARNING

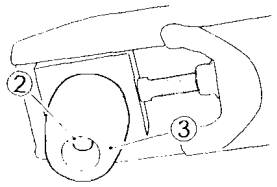
A hot muffler can burn you. The muffler will be hot enough to burn you for some time after stopping the engine.

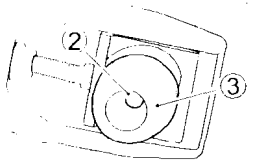
Wait until the muffler cools to avoid burns.

1. Place the motorcycle on the side stand.

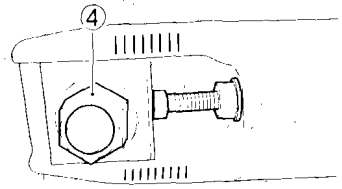


2. Remove the two chain guard screws ① and then remove the chain guard.

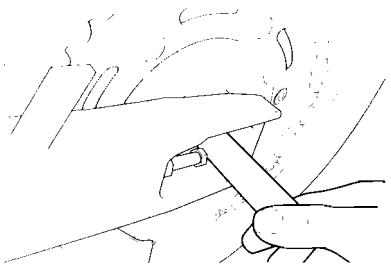




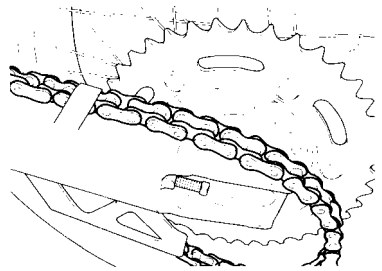
3. Remove the bolt ②. Pull out the axle slider ③.



4. Remove the axle nut ④.
5. Lift the rear end of the motorcycle up and place a jack or a block under the engine or chassis tube.



6. Draw out the axle shaft.
7. With the wheel moved forward, remove the chain from the sprocket.



8. Pull the rear wheel assembly rearward.

NOTE: Never depress the rear brake pedal with the rear wheel removed. It is very difficult to force the pads back into the caliper assembly.

9. To replace the wheel reverse the complete sequence listed.
10. After installing the wheel, apply the brake several times and then check that the wheel rotates freely.

⚠WARNING

Failure to adjust the drive chain and failure to torque bolts and nuts properly could lead to an accident.

- **Adjust the drive chain as described in DRIVE CHAIN ADJUSTMENT section after installing the rear wheel.**
- **Torque bolts and nuts to the proper specifications. If you are not sure of the proper procedure, have your authorized SUZUKI dealer or a qualified mechanic do this.**

⚠WARNING

Failure to extend brake pads after installing the wheel can cause poor braking performance and may result in an accident.

Before riding, "pump" the brake repeatedly until the brake pads are pressed against the brake disks and proper lever/pedal stroke and firm feel are restored. Also check that the wheel rotates freely.

Rear axle nut tightening torque:
110 N·m (11.0 kgf-m, 79.5 lb-ft)

LIGHT BULB REPLACEMENT

The wattage rating of each bulb is shown in the following chart. When replacing a burned out bulb, always use the same wattage rating.

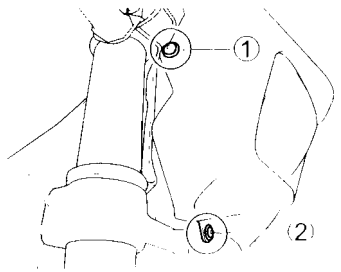
CAUTION

Using a light bulb with the wrong wattage rating can cause electrical system damage or shorten bulb life.

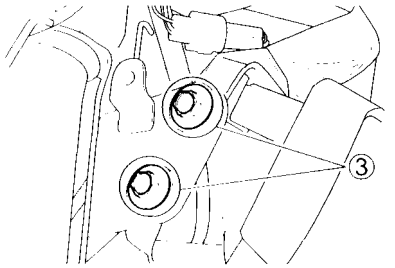
Always use the specified light bulb.

Headlight	12V 60/55W
Turn signal light	12V 21W
Brake light/Taillight	12V 21/5W

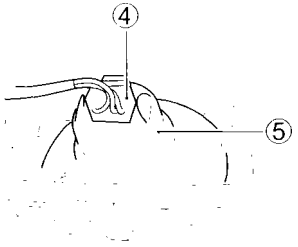
Headlight



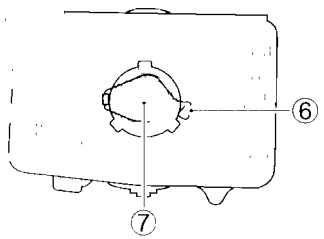
1. Remove the screws ① (right and left), ② and take off the headlight cover.



2. Remove the bolts ③ (right and left.)



3. Disconnect socket ④ from the headlight and remove rubber cap ⑤.



4. Unhook bulb holder spring ⑥, and pull out bulb ⑦.

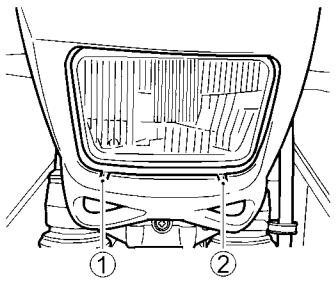
CAUTION

Oil from your skin may damage the headlight bulb or shorten its life.

Grasp the new bulb with a clean cloth.

Headlight Beam Adjustment

The headlight beam can be adjusted both horizontally and vertically if necessary.

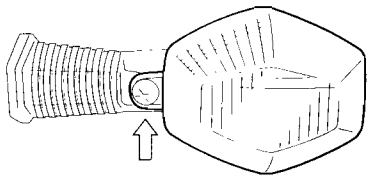


To adjust the beam vertically:
Turn the adjuster ① clockwise or counterclockwise.

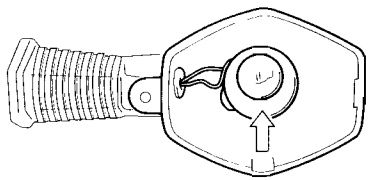
To adjust the beam horizontally:
Turn the adjuster ② clockwise or counterclockwise.

Turn Signal Light

To replace the turn signal light bulb, follow these directions:



1. Remove the screw and take off the lens.



2. Push in on the bulb, turn it to the left, and pull it out.
3. To fit the replacement bulb, push it in and turn it to the right while pushing.

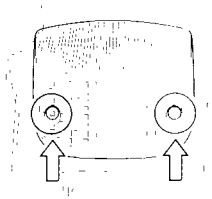
CAUTION

Overtightening the screws when reinstalling the lens may cause the lens to crack.

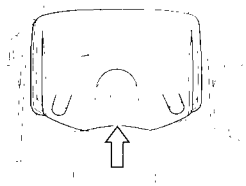
Tighten the screws only until they are snug.

Brake Light/Taillight

To replace the brake light/taillight bulb, follow the procedure below:



1. Remove the two screws and remove the lens.



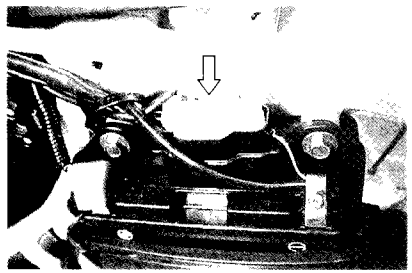
2. Push in on the bulb, turn it to the left, and pull it out.
3. To fit the replacement bulb, push it in and turn it to the right while pushing.

CAUTION

Overtightening the screws when reinstalling the lens may cause the lens to crack.

Tighten the screws only until they are snug.

FUSE



If there is any electrical system failure, first check the fuse. In case the fuse blows, there is a 20A spare fuse.

CAUTION

Installing a fuse of incorrect rating or using aluminum foil or wire instead of a fuse may seriously damage the electrical system.

Always replace a blown fuse with a fuse of the same type and rating. If the new fuse blows in a short time, consult your Suzuki dealer or a qualified mechanic immediately.

TROUBLESHOOTING

FUEL SYSTEM CHECK 8-2
IGNITION SYSTEM CHECK 8-3

8

TROUBLESHOOTING

This troubleshooting guide is provided to help you find the cause of some common complaints.

CAUTION

Failure to troubleshoot a problem correctly can damage your motorcycle. Improper repairs or adjustments may damage the motorcycle instead of fixing it. Such damage may not be covered under warranty.

If you are not sure about the proper action, consult your Suzuki dealer or a qualified mechanic about the problem.

COMPLAINT:
Engine is hard to start or does not start at all.

Something is probably wrong with the fuel system or ignition system.

FUEL SYSTEM CHECK

1. Make sure there is enough fuel in the fuel tank.
2. Check that the fuel valve is in the "ON" position.
3. Make sure there is enough fuel reaching the carburetor from the fuel valve.
   a. Loosen the drain bolt located under the carburetor. Drain the fuel from the carburetor into a container.

⚠WARNING

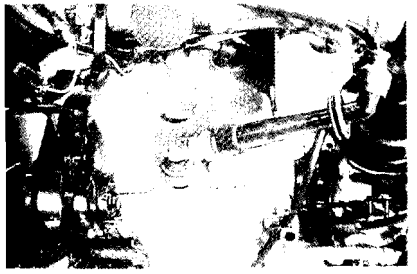
Fuel and fuel vapor are highly flammable and toxic. You can be burned or poisoned when handling fuel.

When draining the carburetor:
- **Stop the engine and keep flames, sparks, and heat sources away.**
- **Drain fuel only outdoors or in a well-ventilated area.**
- **Do not smoke.**
- **Wipe up spills immediately.**
- **Avoid breathing fuel vapor.**
- **Keep children and pets away.**
- **Dispose of drained fuel properly.**

   b. Place the empty container under the carburetor. Turn the fuel valve to the "PRI" position and see if the fuel flows from the drain hole.
   c. Turn the fuel valve lever to the "ON" position.
   d. Drain the fuel and tighten the drain screw.
   e. Push the electric starter but-ton for several seconds to crank the engine referring to the STARTING THE ENGINE section.
   f. Loosen the drain bolt and check that the carburetor is filled back up with fuel.
   g. Tighten the drain bolt.
4. If fuel is reaching the carburetor, ignition system should be checked next.

IGNITION SYSTEM CHECK

1. Remove the spark plug and reattach it to the spark plug lead.



2. While placing the spark plug firmly on the engine, push the starter switch with the ignition switch in the "ON" position, the engine stop switch in the "Ω" position, the transmission in neutral, and the clutch disengaged. If the ignition system is operating properly, a blue spark should jump across the spark plug gap. If there is still no spark, take your motorcycle to an authorized Suzuki dealer.

⚠WARNING

Performing the spark test improperly can cause a high voltage electrical shock or an explosion.

Avoid performing this check if you are not familiar with this procedure, or if you have a heart condition or wear a pacemaker. Keep the spark plug away from the spark plug hole during this test.

COMPLAINT:
Engine Stalls.
1. Make sure there is enough fuel in the fuel tank.
2. Check to see that the spark plug is not fouled. Remove the plug and clean it. Replace it, if necessary.
3. Make sure the fuel valve is not clogged. Also check that the air vent hose connected to the fuel tank is not clogged.
4. Check the engine idle speed with a tachometer. The correct idle speed is 1400 – 1600 r/min.

STORAGE PROCEDURE AND MOTORCYCLE CLEANING

STORAGE PROCEDURE 9-2
PROCEDURE FOR RETURNING TO SERVICE 9-3
CORROSION PREVENTION 9-3
MOTORCYCLE CLEANING 9-5
INSPECTION AFTER CLEANING 9-6

STORAGE PROCEDURE AND MOTORCYCLE CLEANING

STORAGE PROCEDURE

If your motorcycle is to be left unused for an extended period of time, it needs special servicing requiring appropriate materials, equipment and skill. For this reason, Suzuki recommends that you trust this maintenance work to your Suzuki dealer. If you wish to service the machine for storage yourself, follow the general guidelines below:

MOTORCYCLE

Clean the entire motorcycle. Place the motorcycle on the side stand on a firm, flat surface where it will not fall over. Turn the handlebars all the way to the left and lock the steering, and remove the ignition key.

FUEL

1. Fill the fuel tank to the top with fuel mixed with the amount of gasoline stabilizer recommended by the stabilizer manufacturer.
2. Drain the carburetor or run the engine for a few minutes until the stabilized gasoline fills the carburetor.

⚠WARNING

Fuel and fuel vapor are highly flammable and toxic. You can be burned or poisoned when handling fuel.

When draining the fuel:

- **Stop the engine and keep flames, sparks, and heat sources away.**
- **Drain fuel only outdoors or in a well-ventilated area.**
- **Do not smoke.**
- **Wipe up spills immediately.**
- **Avoid breathing fuel vapor.**
- **Keep children and pets away.**
- **Dispose of drained fuel properly.**

ENGINE

1. Pour one tablespoon of motor oil into the spark plug hole. Reinstall the spark plug and crank the engine a few times.
2. Drain the engine oil thoroughly and refill the crankcase with fresh engine oil all the way up to the filler hole.
3. Cover the air cleaner intake and the muffler outlet with oily rags to prevent humidity from entering.

BATTERY

1. Remove the battery from the motorcycle.

NOTE: Be sure to remove the negative terminal first, then remove the positive terminal.

2. Clean the outside of the battery with mild detergent and remove any corrosion from the terminals and wiring harness connections.
3. Store the battery in a room above freezing.

TIRES

Inflate tires to the normal pressure.

EXTERNAL

1. Spray all vinyl and rubber parts with rubber protectant.
2. Spray unpainted surface with rust preventative.
3. Coat painted surfaces with car wax.

MAINTENANCE DURING STORAGE

Once a month, recharge the battery. The standard charging rate is 0.7A × 5 to 10 hours.

PROCEDURE FOR RETURNING TO SERVICE

1. Clean the entire motorcycle.
2. Remove the oily rags from the air cleaner intake and muffler outlet.
3. Drain all the engine oil. Install a new oil filter and fill the engine with fresh oil as outlined in this manual.
4. Remove the spark plug. Turn the engine a few times.
5. Reinstall the spark plug.
6. Make sure that the motorcycle is properly lubricated.
7. Perform the INSPECTION BEFORE RIDING as listed in this manual.
8. Start the motorcycle as outlined in this manual.

CORROSION PREVENTION

It is important to take good care of your motorcycle to protect it from corrosion and keep it looking new for years to come.

Important Information About Corrosion

Common causes of corrosion

1. Accumulation of road salt, dirt, moisture, or chemicals in hard-to-reach areas.
2. Chipping, scratches, and any damage to treated or painted metal surfaces resulting from minor accidents or impacts from stones and gravel.

Road salt, dust-control chemicals, sea air, industrial pollution, and high humidity will all contribute to corrosion.

How to Help Prevent Corrosion

- Wash your motorcycle frequently, at least once a month. Keep your motorcycle as clean and dry as possible.
- Remove foreign material deposits. Foreign material such as road salt, chemicals, road oil or tar, tree sap, bird droppings and industrial fallout may damage your motorcycle's finish. Remove these types of deposits as quickly as possible. If these deposits are difficult to wash off, an additional cleaner may be required. Follow the manufacturer's directions when using these special cleaners.
- Repair finish damage as soon as possible. Carefully examine your motorcycle for damage to the painted surfaces. Should you find any chips or scratches in the paint, touch them up immediately to prevent corrosion from starting. If the chips or scratches have gone through to the bare metal, have a Suzuki dealer make the repair.
- Store your motorcycle in a dry, well ventilated area. If you often wash your motorcycle in the garage or if you frequently park it inside when wet, your garage may be damp. The high humidity may cause or accelerate corrosion. A wet motorcycle may corrode even in a heated garage if the ventilation is poor.
- Cover your motorcycle. Exposure to mid-day sun can cause the colors in paint, plastic parts, and instrument faces to fade. Covering your motorcycle with a high-quality, "breathable" motorcycle cover can help protect the finish from the harmful UV rays in sunlight, and can reduce the amount of dust and air pollution reaching the surface. Your Suzuki dealer can help you select the right cover for your motorcycle.

MOTORCYCLE CLEANING

Washing the Motorcycle

When washing the motorcycle, follow the instructions below:

1. Remove dirt and mud from the motorcycle with running water. You may use a soft sponge or brush. Do not use hard materials which can scratch the paint.
2. Wash the entire motorcycle with mild detergent or car wash soap using a sponge or soft cloth. The sponge or cloth should be frequently soaked in the soap solution.

CAUTION

Radiator fins can be damaged by spraying high pressure water on them.

Do not spray high pressure water on the radiator fins.

NOTE: Avoid spraying or allowing water to flow over the following places:

- *Spark plug*
- *Fuel tank cap*
- *Carburetor*
- *Brake master cylinders*

3. Once the dirt has been completely removed, rinse off the detergent with running water.
4. After rinsing, wipe off the motorcycle with a wet chamois or cloth and allow it to dry in the shade.

5. Check carefully for damage to painted surfaces. If there is any damage, obtain "touch-up" paint and "touch-up" the damage.

Waxing the Motorcycle
After washing the motorcycle, waxing is recommended to further protect and beautify the paint. Observe the precautions specified by the wax manufacturer.

INSPECTION AFTER CLEANING

For extended life of your motorcycle, lubricate according to "GENERAL LUBRICATION" section.

⚠WARNING

Operating the motorcycle with wet brakes can be hazardous. Wet brakes may not provide as much stopping power as dry brakes. This could lead to an accident.

Test your brakes after washing the motorcycle, while riding at slow speed. If necessary, apply brakes several times to let friction dry out the lining.

Follow the procedures in the "INSPECTION BEFORE RIDING" section to check your motorcycle for any problems that may have arisen during your last ride.

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REPORTING SAFETY DEFECTS 10-2
TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED 10-3
SERIAL NUMBER LOCATION 10-4
LOCATION OF LABELS 10-4

CONSUMER INFORMATION

EMISSION CONTROL WARRANTY

Suzuki Motor Corporation warrants to the ultimate purchaser and each subsequent purchaser that this vehicle is designed, built, and equipped so as to conform at the time of sale with all U.S. emission standards applicable at the time of manufacture, and that it is free from defects in materials and workmanship which would cause it not to meet these standards within its useful life. Useful life is defined for each class of motorcycle as 5 years or the corresponding number of kilometers (miles) shown in the chart below, whichever occurs first.

Vehicle class	Engine displacement	Useful Life Distance
Class I	50 to 169 cc	12000 km (7456 miles)
Class II	170 to 279 cc	18000 km (11185 miles)
Class III	280 cc and over	30000 km (18641 miles)

Failures, other than those resulting from defects in material or workmanship, which arise solely as a result of owner abuse and/or lack of proper maintenance are not covered by the warranty.

REPORTING SAFETY DEFECTS

If you believe that your vehicle has a defect which could cause a crash or could cause injury or death, you should immediately inform the National Highway Traffic Safety Administration (NHTSA) in addition to notifying American Suzuki Motor Corp.

If NHTSA receives similar complaints, it may open an investigation, and if it finds that a safety defect exists in a group of vehicles, it may order a recall and remedy campaign. However, NHTSA cannot become involved in individual problems between you, your dealer, or American Suzuki Motor Corp.

To contact NHTSA, you may either call the Vehicle Safety Hot Line toll-free 1-888-327-4236 (TTY: 1-800-424-9153); go to http://www.safercar.gov; or write to: Administrator, NHTSA, 400 Seventh Street, SW., Washington DC 20590. You can also obtain other information about motor vehicle safety from http://www.NHTSA.gov.

To contact American Suzuki, owners in the continental United States can call toll-free 1-800-444-5077, or write to: American Suzuki Motor Corporation Motorcycle Customer Service P.O. Box 1100, Brea, CA 92822-1100.

For owners outside the continental United States, please refer to the distributor's address listed on your Warranty Information brochure.

TAMPERING WITH NOISE CONTROL SYSTEM PROHIBITED

Federal law prohibits the following acts or the causing thereof:

1. The removal or rendering inoperative by any person other than for purposes of maintenance, repair, or replacement, of any device or element of design incorporated into any new vehicle for the purpose of noise control prior to its sale or delivery to the ultimate purchaser or while it is in use, or
2. The use of the vehicle after such device or element of design has been removed or rendered inoperative by any person.

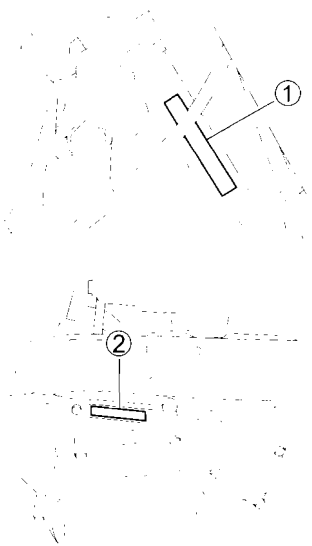
Among those acts presumed to constitute tampering are the acts listed below:

- Removing or puncturing the muffler, baffles, header pipes, screen type spark arrester (if equipped) or any other component which conducts exhaust gases.
- Replacing the exhaust system or muffler with a system or muffler not marked with the same model specific code as the code listed on the Motorcycle Noise Emission Control Information label, and certified to appropriate EPA noise standards.
- Removing or puncturing the air cleaner case, air cleaner cover, baffles, or any other component which conducts in take air.

Whenever replacing parts on your motorcycle, Suzuki recommends that you use genuine Suzuki replacement parts or their equivalent.

SERIAL NUMBER LOCATION

You need to know the frame and engine serial numbers to get title documents for your motorcycle. You also need these numbers to help your dealer when you order parts.



The frame number ① is stamped on the steering head tube as shown in the illustration. The engine serial number ② is stamped on the right side of the crankcase assembly.

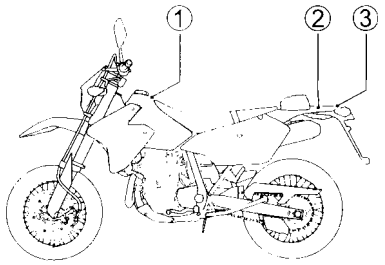
Write down the serial numbers here for your future reference.

Frame No.

Engine No.

LOCATION OF LABELS

Read and follow all of the warnings labeled on your motorcycle. Make sure you understand all of the labels. Keep the labels on your motorcycle. Do not remove them for any reason.



①

⚠ WARNING

Failure to follow these safety precautions may increase your risk of injury:

- **Wear a helmet, eye protection, and bright protective clothing.**
- **Don't ride after consuming alcohol or other drugs.**
- **Slow down on slippery surfaces, unfamiliar terrain or when visibility is reduced.**
- **Read owner's manual carefully.**

②

⚠ WARNING

- Check tire condition, wear, and cold tire pressure before each ride.
- Replace only with tires of listed size and type.
- Read Owner's manual for more information.

COLD TIRE PRESSURE	SOLO RIDING			DUAL RIDING		
	kPa	kgf/cm²	psi	kPa	kgf/cm²	psi
FRONT	175	1.75	25	175	1.75	25
REAR	200	2.00	29	225	2.25	33

		FRONT	REAR
TIRE SIZE		120/70 R17 M/C 58H	140/70 R17 M/C 66H
TYPE	DUNLOP	D208F SM	D208 SM

③

The owner' s manual contains important safety information and instructions which should be read carefully before operating the vehicle.
If the vehicle has been resold, obtain the owner' s manual from the previous owner or contact your local SUZUKI dealer for assistance.

SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2225 mm (87.6 in)
Overall width	855 mm (33.7 in)
Overall height	1200 mm (47.2 in)
Wheelbase	1460 mm (57.5 in)
Ground clearance	260 mm (10.2 in)
Seat height	890 mm (35.0 in)
Dry mass (weight)	134 kg (295 lbs)

ENGINE

Type	Four-stroke, liquid-cooled, DOHC
Number of cylinders	1
Bore	90.0 mm (3.543 in)
Stroke	62.6 mm (2.465 in)
Displacement	398 cm³ (24.3 cu. in)
Compression ratio	11.3 : 1
Carburetor	MIKUNI BSR36, single
Air cleaner	Polyurethane foam element
Starter system	Electric
Lubrication system	Dry sump

DRIVE TRAIN

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	2.960 (74/25)
Gear ratios, Low	2.285 (32/14)
2nd	1.733 (26/15)
3rd	1.375 (22/16)
4th	1.090 (24/22)
Top	0.863 (19/22)
Final reduction ratio	2.733 (41/15)
Drive chain	RK520KDO, 110 links

CHASSIS

Front suspension	Inverted telescopic, coil spring, oil damped
Rear suspension	Link type, coil spring, oil damped
Front suspension stroke	260 mm (10.2 in)
Rear wheel travel	276 mm (10.9 in)
Caster	26° 15'
Trail	94 mm (3.70 in)
Steering angle	38° (right & left)
Turning radius	2.6 m (8.5 ft)
Front brake	Disk
Rear brake	Disk
Front tire size	120/70 R17 M/C 58H, tube type
Rear tire size	140/70 R17 M/C 66H, tube type

ELECTRICAL

Ignition type	Electronic ignition (CDI)
Spark plug	DPR8EA-9 or DENSO U24ESR-N
Battery	12V 28.8 kC (8 Ah)/10 HR
Generator	Three-phase A.C. generator
Fuse	30A
Headlight	12V 60/55W
Turn signal light	12V 21W × 4
Brake light/Taillight	12V 21/5W
Speedometer light	LED
Neutral indicator light	LED
Hight beam indicator light	LED
Turn signal indicator light	LED
Water temperature indicator light	LED

CAPACITIES

Fuel tank, including reserve	10.0 L (2.6 US gal)	
	9.5 L (2.5 US gal)	California model
Reserve	2.3 L (0.6 US gal)	
Engine oil, oil change	1700 ml (1.8 US qt)	
with filter change	1800 ml (1.9 US qt)	
Coolant	1300 ml (1.4 US qt)	

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⚠WARNING

Failure to follow these safety precautions may increase your risk of injury:

- Wear a helmet, eye protection, and bright protective clothing.
- Don't ride after consuming alcohol or other drugs.
- Slow down on slippery surfaces, unfamiliar terrain, or when visibility is reduced.
- Read owner's manual carefully.

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K7 **SUZUKI MOTOR CORPORATION**
300 TAKATSUKA, HAMAMATSU, JAPAN Printed in Japan

SUZUKI

DR-Z400

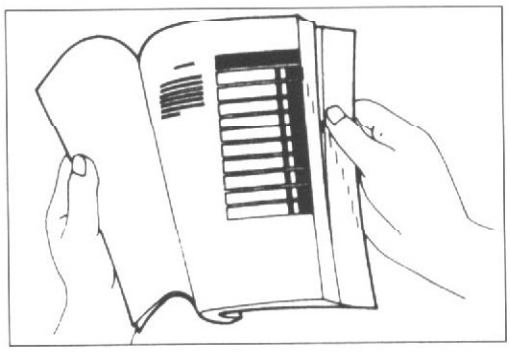
M.Y 2000-2007

SERVICE MANUAL

HOW TO USE THIS MANUAL

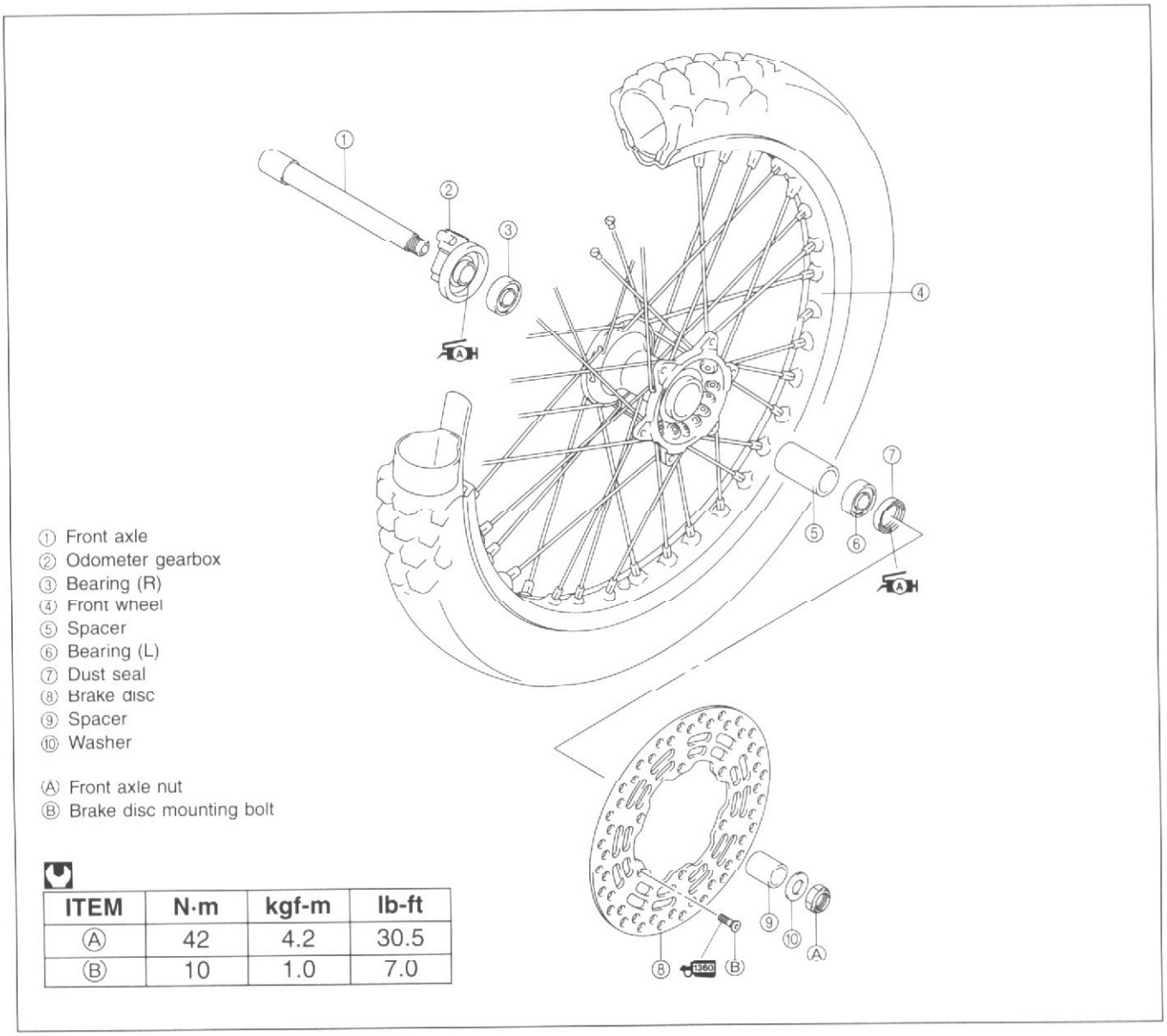
TO LOCATE WHAT YOU ARE LOOKING FOR:

1. The text of this manual is divided into sections.
2. The section titles are listed in the GROUP INDEX.
3. Holding the manual as shown at the right will allow you to find the first page of the section easily.
4. The contents are listed on the first page of each section to help you find the item and page you need.



COMPONENT PARTS AND WORK TO BE DONE

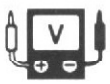
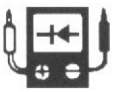
Under the name of each system or unit there is an exploded view which provides work instructions and other service information (e.g., tightening torque, lubricating points, and locking agent points).
Example: Front wheel



ITEM	N·m	kgf-m	lb-ft
Ⓐ	42	4.2	30.5
Ⓑ	10	1.0	7.0

SYMBOLS

Listed in the table below are the symbols indicating instructions and other information necessary for servicing. The meaning of each symbol is also included in the table.

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	Torque control required. Data beside it indicates specified torque.		Apply THREAD LOCK "1342". 99000-32050
	Indicates service data.		Apply or use brake fluid.
	Apply oil. Use engine oil unless otherwise specified.		Measure in voltage range.
	Apply molybdenum oil solution. (mixture of engine oil and SUZUKI MOLY PASTE in a ratio of 1:1)		Measure in resistance range.
	Apply SUZUKI SUPER GREASE "A". 99000-25030 (For USA) 99000-25010 (For the other countries)		Measure in current range.
	Apply SUZUKI SILICONE GREASE. 99000-25100		Measure in diode test range.
	Apply SUZUKI MOLY PASTE. 99000-25140		Measure in continuity test range.
	Apply SUZUKI BOND "1207B". 99104-31140 (For USA) 99000-31140 (For the other countries)		Use special tool.
	Apply SUZUKI BOND "1215". 99000-31110 (Except USA)		Use engine coolant. 99000-99032-11X (Except USA)
	Apply THREAD LOCK SUPER "1303". 99000-32030		Use fork oil. 99000-99001-SS5
	Apply THREAD LOCK SUPER "1322". 99000-32110 (Except USA)		

GENERAL INFORMATION

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WARNING/CAUTION/NOTE

Please read this manual and follow its instructions carefully. To emphasize special information, the symbol and the words WARNING, CAUTION and NOTE have special meanings. Pay special attention to the messages highlighted by these signal words.

⚠ WARNING

Indicates a potential hazard that could result in death or injury.

⚠ CAUTION

Indicates a potential hazard that could result in motorcycle damage.

NOTE:

Indicates special information to make maintenance easier or instructions clearer.

Please note, however, that the warnings and cautions contained in this manual cannot possibly cover all potential hazards relating to the servicing, or lack of servicing, of the motorcycle. In addition to the WARNINGS and CAUTIONS stated, you must use good judgement and basic mechanical safety principles. If you are unsure about how to perform a particular service operation, ask a more experienced mechanic for advice.

GENERAL PRECAUTIONS

⚠ WARNING

- **Proper service and repair procedures are important for the safety of the service mechanic and the safety and reliability of the motorcycle.**
- **When two or more persons work together, pay attention to the safety of each other.**
- **When it is necessary to run the engine indoors, make sure that exhaust gas is forced outdoors.**
- **When working with toxic or flammable materials, make sure that the area you work in is well ventilated and that you follow all of the manufacturer's instructions.**
- **Never use gasoline as a cleaning solvent.**
- **To avoid getting burned, do not touch the engine, engine oil, radiator, and exhaust system until they have cooled.**
- **After servicing the fuel, oil, engine coolant, exhaust or brake systems, check all of the lines, and fittings related to the system for leaks.**

⚠ CAUTION

* If parts replacement is necessary, replace the parts with SUZUKI Genuine Parts or their equivalent.
* When removing parts that are to be reused, keep them arranged in an orderly manner so that they may be reinstalled in the proper order.
* Be sure to use special tools when instructed.
* Make sure that all parts used in reassembly are clean. Lubricate them when specified.
* Use the specified lubricants, bonds, or sealants.
* When removing the battery, disconnect the ⊖ battery lead wire first, then the ⊕ battery lead wire.
* When reconnecting the battery, connect the ⊕ battery lead wire first, then the ⊖ battery lead wire. Finally, cover the ⊕ battery terminal with the terminal cover.
* When performing service to electrical parts, disconnect the ⊖ battery lead wire, unless the service procedure requires the battery power.
* When tightening cylinder head and crankcase nuts and bolts, tighten the larger sizes first. Always tighten the nuts and bolts from the inside working out, diagonally and to the specified torque.
* Whenever you remove oil seals, gaskets, packing, O-rings, self-locking nuts, locking washers, cotter pins, circlips, and other specified parts, be sure to replace them with new ones. Also, before installing these new parts, be sure to remove any left over material from the mating surfaces.
* Never reuse a circlip. When installing a new circlip, take care not to expand the end gap larger than required to slip the circlip over the shaft. After installing a circlip, always ensure it is completely seated in its groove and securely fitted.
* Use a torque wrench to tighten fasteners to the specified torque. Wipe off grease and oil if a thread is smeared with them.
* After reassembling, check parts for tightness and proper operation.

* To protect the environment, do not unlawfully dispose of used motor oil, engine coolant, all other fluids, batteries, and tires.
* To protect the earth's natural resources, properly dispose of used motorcycles and parts.

SUZUKI DR-Z400

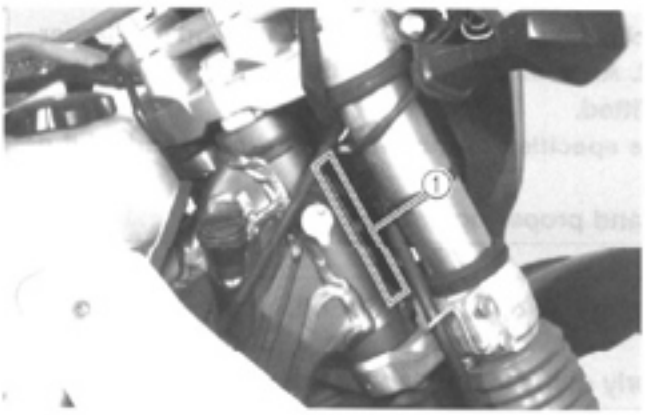
RIGHT SIDE

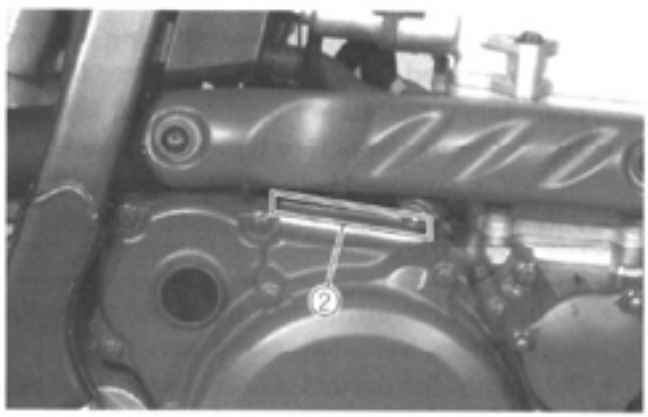
LEFT SIDE

* Difference between photographs and the actual motorcycle depends on the markets.

SERIAL NUMBER LOCATION

The frame serial number or V.I.N. (Vehicle Identification Number) ① is stamped on the right side of the steering head pipe. The engine serial number ② is located on the right side of the crankcase. These numbers are required especially for registering the machine and ordering spare parts.





FUEL, OIL, AND ENGINE COOLANT RECOMMENDATIONS

FUEL (FOR USA AND CANADA)

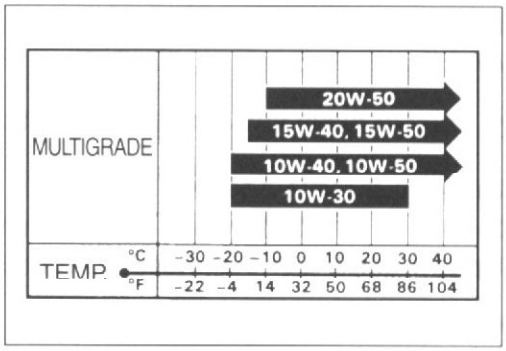
- Use only unleaded gasoline of at least 87 pump octane ($\frac{R+M}{2}$) method or 91 octane or higher rated by the Research Method.
- SUZUKI recommends that customers use alcohol-free unleaded gasoline whenever possible.
- Use of blended gasoline containing MTBE (Methyl Tertiary Butyl Ether) is permitted.
- Use of blended gasoline/alcohol fuel is permitted, provided that the fuel contains not more than 10% ethanol. Gasoline/alcohol fuel may contain up to 5% methanol if appropriate cosolvents and corrosion inhibitors are present in it.
- If the performance of the motorcycle is unsatisfactory while using blended gasoline/alcohol fuel, you should switch to alcohol free unleaded gasoline.
- Failure to follow these guidelines could possibly void applicable warranty coverage. Check with your fuel supplier to make sure that the fuel you intend to use meets the requirements listed above.

FUEL (FOR THE OTHER COUNTRIES)

Use unleaded gasoline that is graded 91 octane or higher by the Research Method.

ENGINE OIL

SUZUKI recommends the use of SUZUKI PERFORMANCE 4 MOTOR OIL to ensure longer service life of your motorcycle. Use only oils which are rated SF or SG under the API service classification. The recommended viscosity is SAE 10W-40. If an SAE 10W-40 motor oil is not available, select an alternative according to the following chart.



BRAKE FLUID

Specification and classification: DOT 4

⚠ WARNING

- **This motorcycle uses a glycol-based brake fluid. Do not use or mix other types of brake fluid such as silicone-based and petroleum-based fluids for refilling the system, otherwise serious damage will result to the brake system.**
- **Do not use any brake fluid taken from old, used, or unsealed containers.**
- **Do not reuse brake fluid left over from the last servicing or which has been stored for a long period of time.**

FRONT FORK OIL

Use SUZUKI FORK OIL SS-05 or an equivalent fork oil.

ENGINE COOLANT

Since antifreeze also has corrosion- and rust-inhibiting properties, always use engine coolant containing antifreeze, even if the atmospheric temperature does not go below the freezing point.
Use an antifreeze designed for aluminum radiators. SUZUKI recommends the use of SUZUKI COOLANT antifreeze. If this is not available, use an equivalent antifreeze for aluminum radiators.
Mix only distilled water with the antifreeze. Other types of water can corrode and clog the aluminum radiator.

Mix distilled water and antifreeze at a ratio of 50:50 – 40:60.

For more information, refer to page 5-4 in the Cooling System section.

⚠ CAUTION

The percentage of antifreeze in the coolant should be between 50 to 60%. If the percentage of antifreeze is above or below this range the coolant's frost protection and rust-inhibiting capabilities will be reduced. Always keep the antifreeze content above 50% even if the atmospheric temperature does not go below the freezing point.

BREAK-IN PROCEDURES

During manufacturing only the best possible materials are used and all machined parts are finished to a very high standard. It is still necessary to allow the moving parts to "BREAK-IN" before subjecting the engine to maximum stresses. The future performance and reliability of the engine depends on the care and restraint exercised during its early life. Refer to the following break-in engine speed recommendations.

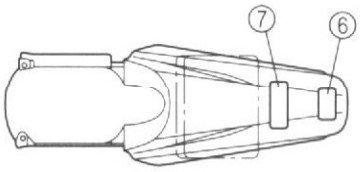
- Keep to these brake-in throttle positions during the break-in period.

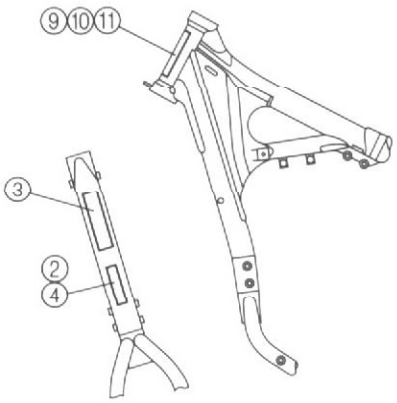
Break-in throttle position
Initial 800 km (500 miles): Less than 1/2 throttle
Up to 1 600 km (1 000 miles): Less than 3/4 throttle

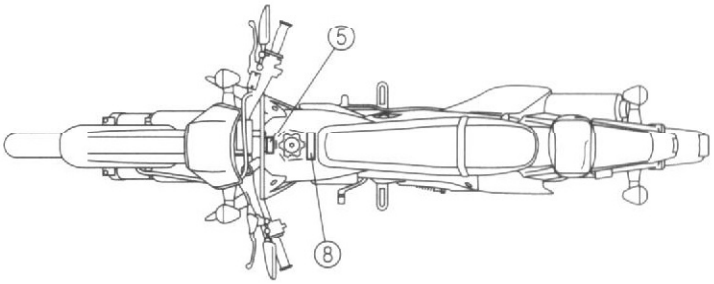
- Upon reaching an odometer reading of 1 600 km (1 000 miles) you can subject the motorcycle to full throttle operation for short periods of time.

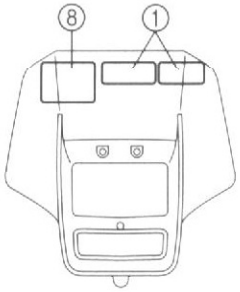
INFORMATION LABELS

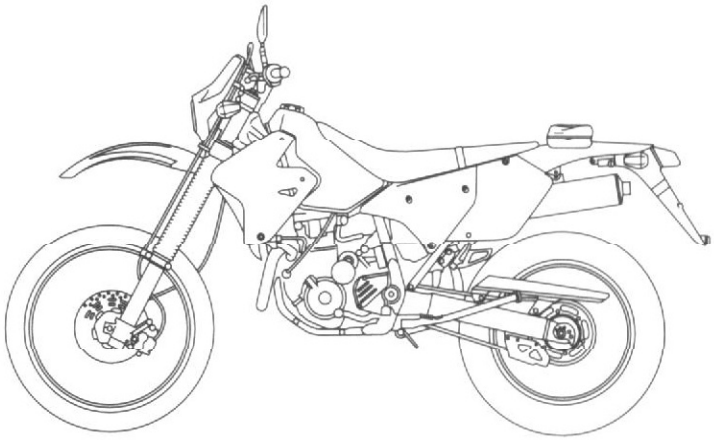
NO	LABEL or PLATE NAME	APPLIED SPECIFICATION					
		E-02	E-03	E-19	E-28	E-33	E-54
①	Engine starting label	○	○	○	○	○	○
②	Noise label	—	○	—	—	○	—
③	Information label	—	○	—	—	○	—
④	ICES Canada label	—	—	—	○	—	—
⑤	Fuel caution label	○	—	—	—	—	—
⑥	Manual notice label		○			○	—
⑦	Tire air pressure label	○	○	○	○	○	○
⑧	Warning safety label	○	○	○	○	○	○
⑨	ID plate	○	—	○	—	—	○
⑩	Safety plate	—	○	—	—	○	—
⑪	Compliance label	—	—	—	○	—	—











SPECIFICATIONS

DIMENSIONS AND DRY MASS

Overall length	2 310 mm (90.9 in)
Overall width	875 mm (34.4 in)
Overall height	1 240 mm (48.8 in)
Wheelbase	1 485 mm (58.5 in)
Ground clearance	300 mm (11.8 in)
Seat height	935 mm (36.8 in)
Dry mass	132 kg (291 lbs)

ENGINE

Type	Four-stroke, liquid-cooled, DOHC
Number of cylinders	1
Bore	90.0 mm (3.543 in)
Stroke	62.6 mm (2.465 in)
Piston displacement	398 cm^3 (24.3 cu. in)
Compression ratio	11.3 : 1
Carburetor	MIKUNI BSR36
Air cleaner	Polyurethane foam element
Starter system	Electric
Lubrication system	Dry sump

TRANSMISSION

Clutch	Wet multi-plate type
Transmission	5-speed constant mesh
Gearshift pattern	1-down, 4-up
Primary reduction ratio	2.960 (74/25)
Final reduction ratio	2.933 (44/15)
Gear ratios, Low	2.285 (32/14)
2nd	1.733 (26/15)
3rd	1.375 (22/16)
4th	1.090 (24/22)
Top	0.863 (19/22)
Drive chain	RK520KZO, 112 links

CHASSIS

Front suspension	Telescopic, coil spring, oil damped, spring preload fully adjustable, compression damping force 11-way adjustable
Rear suspension	Link type, coil spring, oil damped, spring preload fully adjustable, compression damping force 26-way adjustable
Front fork stroke	288 mm (11.3 in)
Rear wheel travel	295 mm (11.6 in)
Caster	27° 10′
Trail	107 mm (4.21 in)
Steering angle	45° (right & left)
Turning radius	2.2 m (7.2 ft)
Front brake	Disc brake
Rear brake	Disc brake
Front tire size	80/100-21 51P
Rear tire size	120/90-18 65P

ELECTRICAL

Ignition type	Electronic ignition (CDI)
Ignition timing	7° BTDC at 1 500 r/min
Spark plug	NGK: CR8E DENSO: U24ESR-N
Generator	Three-phase A.C. generator
Fuse	20 A
Battery	12 V 23.4 kC (6.5 Ah)/10 HR
Headlight	12 V 60/55 W
Position light	12 V 4 W ..... For E-02, 19, 54
Brake light/taillight	12 V 21/5 W
Turn signal light	12 V 21 W

CAPACITIES

Fuel tank, including reserve	9.5 L (2.5 US gal, 2.1 Imp gal) ..... For E-33 10.0 L (2.6 US gal, 2.2 Imp gal) ..... For the other countries
reserve	2.3 L (0.6 US gal, 0.5 Imp gal)
Engine oil, oil change	1 700 ml (1.8 US qt, 1.5 Imp qt)
oil and filter change	1 800 ml (1.9 US qt, 1.6 Imp qt)
engine overhaul	1 900 ml (2.0 US qt, 1.7 Imp qt)
Front fork oil	709 ml (24.0 US oz, 25.0 Imp oz)
Engine coolant	1 250 ml (1.3 US qt, 1.1 Imp qt)

NOTE:
These specifications are subject to change without notice.

COUNTRY AND AREA CODES

The following are codes and their applicable country or area.

CODE	COUNTRY OR AREA
E-02	UK
E-03	USA
E-19	EU
E-28	Canada
E-33	California (USA)
E-54	Israel

PERIODIC MAINTENANCE

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PERIODIC MAINTENANCE SCHEDULE

The chart below lists the recommended intervals for all the required periodic service work necessary to keep the motorcycle operating at peak performance and economy. Maintenance intervals are expressed in terms of kilometers, miles and months, and are dependent on whichever comes first.

NOTE:
More frequent servicing may be performed on motorcycles that are used under severe conditions.

PERIODIC MAINTENANCE CHART

Interval / Item	km	1 000	6 000	12 000	18 000	24 000
	miles	600	4 000	7 500	11 000	15 000
	months	1	6	12	18	24
Air cleaner		–	I	I	R	I
Exhaust pipe nut and bolt and muffler nut and bolts		T	–	T	–	T
Tappet clearance		–	–	–	–	I
Spark plug		–	I	R	I	R
Spark arrester (For E-03, 28, 33)		–	C	C	C	C
Fuel line		–	I	I	I	I
		Replace every four years.				
Engine oil		R	R	R	R	R
Engine oil filter		R	–	–	R	–
Engine oil hoses		I	I	I	I	I
Carburetor		I	I	I	I	I
Engine coolant		Replace every two years.				
Radiator hose		–	I	I	I	I
Clutch		–	I	I	I	I
Drive chain		I	I	I	I	I
		Lubricate every 1 000 km (600 miles)				
Brakes		I	I	I	I	I
Brakes fluid		–	I	I	I	I
		Replace every two years.				
Brake hoses		–	I	I	I	I
		Replace every four years.				
Tires		–	I	I	I	I
Spoke nipples		I	I	I	I	I
Steering		I	–	I	–	I
Front fork		–	–	I	–	I
Rear suspension		–	–	I	–	I
Evaporative emission control system (For E-33)		Inspect every 12 000 km (7 500 miles) Replace vapor hoses every four years.				
PAIR (Air supply) system (For E-02, 19, 54)		–	–	I	–	I
Chassis nuts and bolts		T	T	T	T	T

I = Inspect and adjust, clean, lubricate, or replace as necessary.
R = Replace
T = Tighten
C = Clean

MAINTENANCE AND TUNE-UP PROCEDURES

This section describes the servicing procedures for each item mentioned in the periodic maintenance chart on the previous page.

AIR CLEANER

Inspect every 6 000 km (4 000 miles, 6 months).
Replace every 18 000 km (11 000 miles, 18 months).

If the air cleaner is clogged with dust, intake resistance will be increased, with a resultant decrease in power output and an increase in fuel consumption. Check and clean the air cleaner element in the following manner.

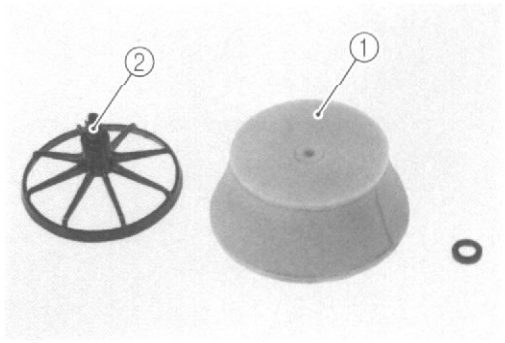
- Remove the left frame cover. (☞ 6-2)
- Remove the air cleaner element.
- Separate the polyurethane foam element ① and element frame ②.
- Fill a wash pan of a proper size with a nonflammable cleaning solvent. Immerse the air cleaner element in the cleaning solvent and wash it.
- Press the air cleaner element between the palms of both hands to remove the excess solvent: do not twist or wring the element or it will tear.
- Immerse the element in motor oil, and then squeeze out the excess oil leaving the element slightly wet.

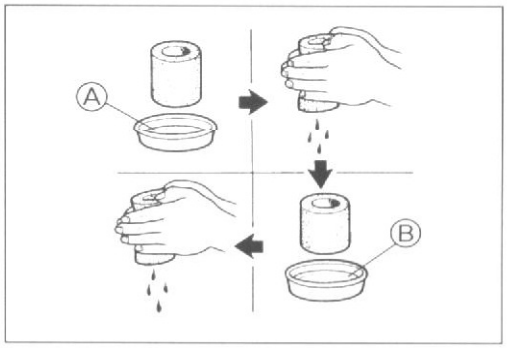
Ⓐ Nonflammable cleaning solvent
Ⓑ Motor oil SAE #30 or SAE 10W-40

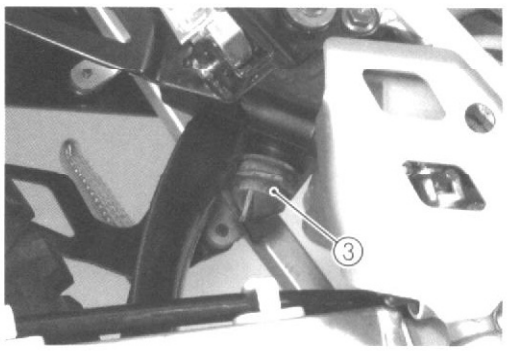
⚠ CAUTION

* **Inspect the air cleaner element for tears. A torn element must be replaced.**
* **The surest way to accelerate engine wear is to operate the engine without the element or with one that is torn. Make sure that the air cleaner element is in good condition at all times. Life of the engine depends largely on this component!**

- Remove the drain plug ③ to allow any water to drain out.





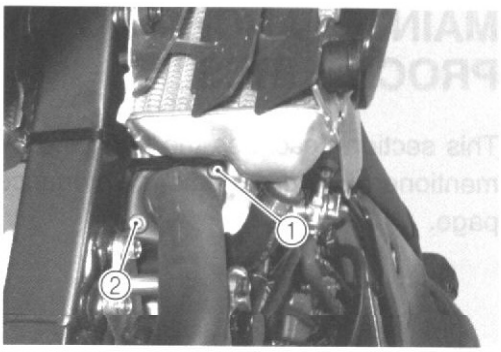


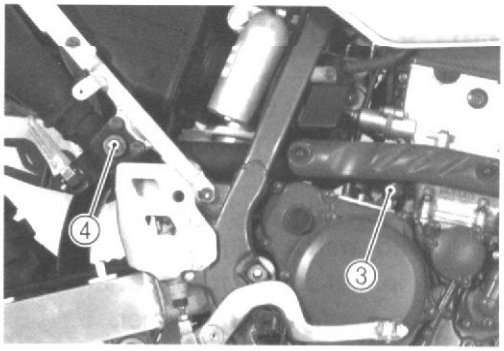
EXHAUST PIPE NUT AND BOLT AND MUFFLER NUT AND BOLTS

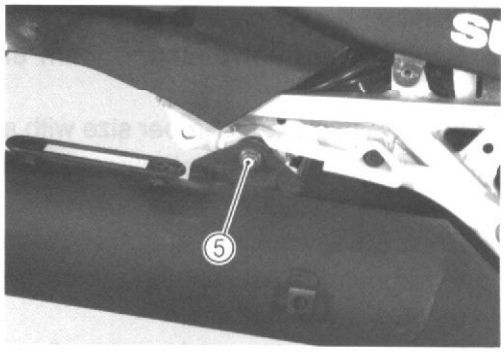
Tighten initially at 1 000 km (600 miles, 1 month) and every 12 000 km (7 500 miles, 12 months) thereafter.

- Remove the right frame cover. (☞ 6-2)
- Tighten the exhaust pipe nut ①, exhaust pipe bolt ②, muffler connection bolt ③, muffler mounting bolt ④, and muffler mounting nut ⑤ to the specified torque.

Exhaust pipe nut and bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)
Muffler connection bolt: 20 N·m (2.0 kgf-m, 14.5 lb-ft)
Muffler mounting nut and bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)







TAPPET CLEARANCE

Inspect every 24 000 km (15 000 miles, 24 months).

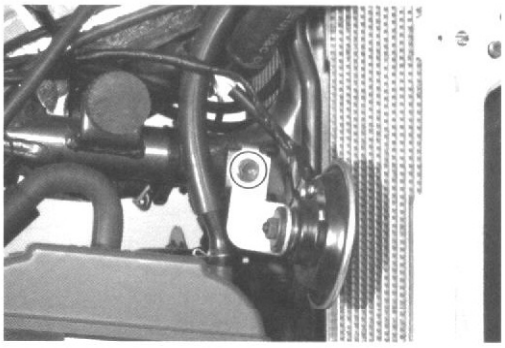
INSPECTION

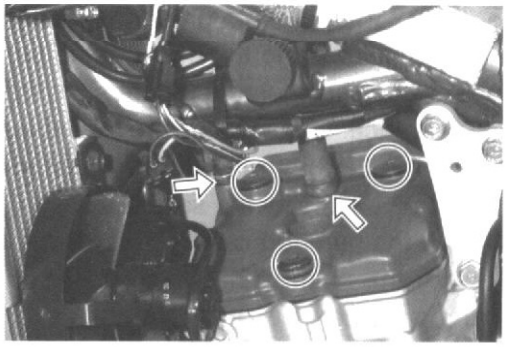
- Remove the fuel tank. (☞ 4-2)
- Drain the engine oil. (☞ 2-11)
- Disconnect the spark plug cap and remove the spark plug. (☞ 2-9 and 2-10)
- Loosen the horn mounting bracket bolt.
- Remove the cylinder head cover.

The tappet clearance specification is different for both intake and exhaust valves.
Tappet clearance adjustment must be checked and adjusted: 1) at the time of periodic inspection, 2) when the valve mechanism is serviced, and 3) when the camshafts are removed for servicing.

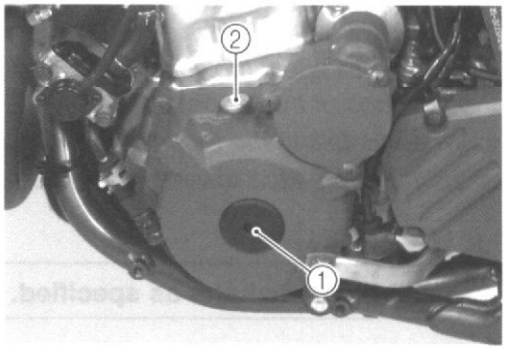
NOTE:

* *The piston must be at top dead center (TDC) on the compression stroke in order to check or adjust the tappet clearance.*
* *The tappet clearance should only be checked when the engine is cold.*

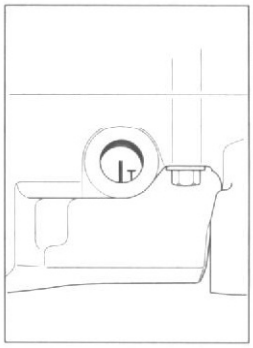


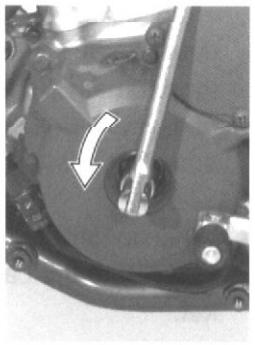


- Remove the generator cover cap ① and valve timing inspection plug ②.



- Rotate the crankshaft with a box wrench to set the piston at TDC on the compression stroke. (Rotate the crankshaft until the "T" line on the generator rotor is aligned with the center of the hole in the generator cover.)



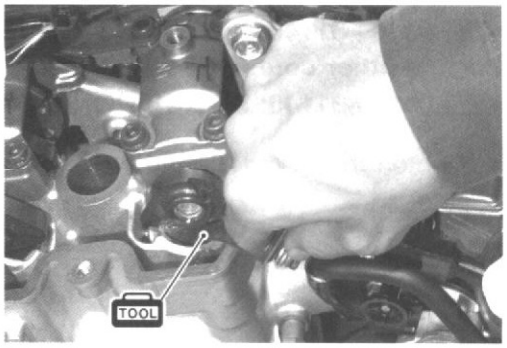


- Insert a thickness gauge between the tappet and the cam. If the clearance is out of specification, adjust it to specification as follows.

TOOL 09900-20803: Thickness gauge

DATA Tappet clearance (when cold)

IN: 0.10 – 0.20 mm (0.0039 – 0.0079 in)
EX: 0.20 – 0.30 mm (0.0079 – 0.0118 in)



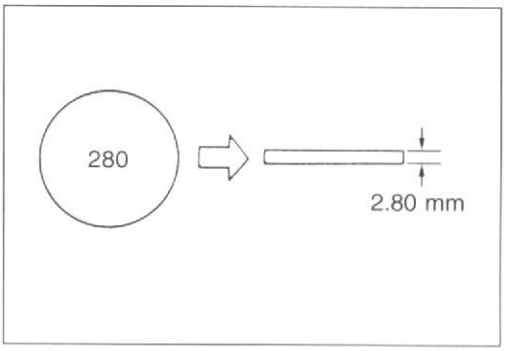
Note: In this photo the Suzuki mechanic is checking the valve tappet clearance on the EXHAUST STROKE! Ignore this picture!

ADJUSTMENT

The clearance is adjusted by replacing the existing tappet shim with a thicker or thinner shim.

- Remove the intake or exhaust camshafts. (☞ 3-12)
- Remove the tappet and shim by hand or with a magnet. (☞ 3-22)

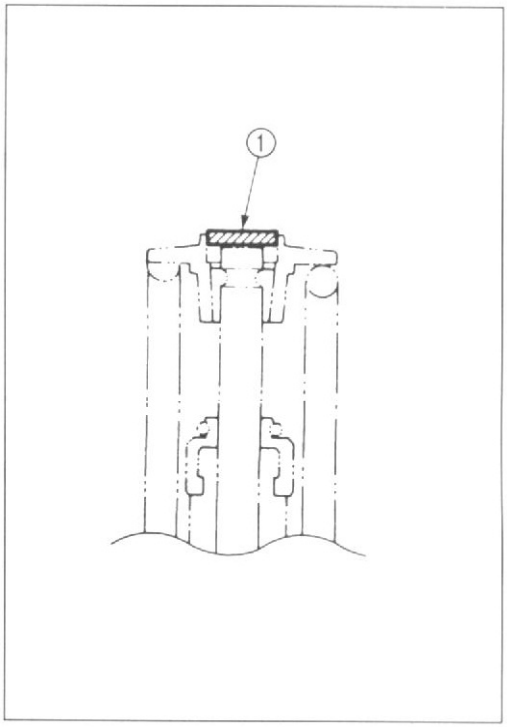
- Check the numbers printed on the tappet shim. These numbers indicate the thickness of the tappet shim, as illustrated.
- Select a replacement tappet shim that will provide the proper clearance. Tappet shims are available in 25 sizes, ranging from 2.30 to 3.50 mm (0.09 to 0.14 in) in increments of 0.05 mm (0.002 in). Install the selected shim ① at the valve stem end, with the numbers facing towards the tappet. Be sure to measure the shim with a micrometer to ensure that it is of the proper size.
  Refer to the tappet shim selection table for details.



NOTE:

* *Be sure to apply molybdenum oil solution to the top and bottom faces of the tappet shim.*

* *When installing the tappet shim, make sure that the side with the numbers face towards the tappet.*



⚠ CAUTION

Install the camshafts as specified. (☞ 3-61 to 3-63)

- After replacing the tappet shim and camshafts, rotate the crankshaft so that the tappet is depressed fully (this will squeeze out any oil trapped between the tappet shim and the tappet that could cause an incorrect measurement). After rotating the crankshaft, check the tappet clearance again to make sure that it is within specification.

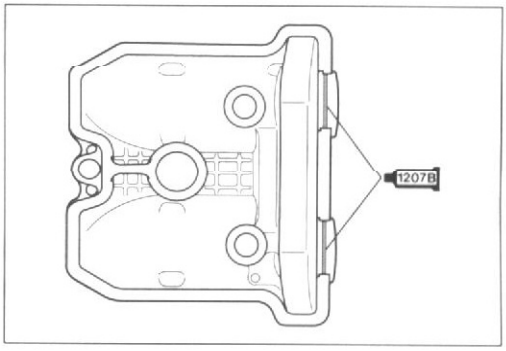
- When installing the cylinder head cover, apply SUZUKI BOND "1207B" to the cam end caps of the cylinder head cover gasket.

For USA

99104-31140: SUZUKI BOND "1207B"

For the other countries

99000-31140: SUZUKI BOND "1207B"



- Tighten the cylinder head cover bolts to specification in two stages.

Cylinder head cover bolt

Initial: 10 N·m (1.0 kgf-m, 7.0 lb-ft)
Final: 14 N·m (1.4 kgf-m, 10.0 lb-ft)

TAPPET SHIM SELECTION TABLE (INTAKE)
TAPPET SHIM NO. (12892-41C00-XXX)

TAPPET SHIM SET NO. (12800-41810)

MEASURED TAPPET CLEARANCE (mm) \ SUFFIX NO. / PRESENT SHIM SIZE (mm)	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350
	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50
0.00–0.04			2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40
0.05–0.09		2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45
0.10–0.20	SPECIFIED CLEARANCE/NO ADJUSTMENT REQURED																								
0.21–0.25	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50	
0.26–0.30	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50		
0.31–0.35	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50			
0.36–0.40	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50				
0.41–0.45	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50					
0.46–0.50	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50						
0.51–0.55	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50							
0.56–0.60	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50								
0.61–0.65	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50									
0.66–0.70	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50										
0.71–0.75	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50											
0.76–0.80	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50												
0.81–0.85	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50													
0.86–0.90	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50														
0.91–0.95	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50															
0.96–1.00	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50																
1.01–1.05	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50																	
1.06–1.10	3.25	3.30	3.35	3.40	3.45	3.50	3.50																		
1.11–1.15	3.30	3.35	3.40	3.45	3.50	3.50																			
1.16–1.20	3.35	3.40	3.45	3.50	3.50																				
1.21–1.25	3.40	3.45	3.50	3.50																					
1.26–1.30	3.45	3.50	3.50																						
1.31–1.35	3.50	3.50																							
1.36–1.40	3.50																								

How to use this chart:

I. Measure tappet clearance when the engine is cold.
II. Measure present shim size.
III. Match clearance in vertical column with present shim size in horizontal column.

Example:

Tappet clearance is	0.23 mm
Present shim size	2.70 mm
Shim size to be used	2.80 mm

TAPPET SHIM SELECTION TABLE (EXHAUST)

TAPPET SHIM NO. (12892-41C00-XXX)

TAPPET SHIM SET NO.(12800-41810)

MEASURED TAPPET CLEARANCE (mm) \ SUFFIX NO. / PRESENT SHIM SIZE (mm)	230	235	240	245	250	255	260	265	270	275	280	285	290	295	300	305	310	315	320	325	330	335	340	345	350
	2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50
0.00–0.04					2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30
0.05–0.09				2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35
0.10–0.14			2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40
0.15–0.19		2.30	2.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45
0.20–0.30	SPECIFIED CLEARANCE/NO ADJUSTMENT REQURED																								
0.31–0.35	2.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50	
0.36–0.40	2.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50		
0.41–0.45	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50			
0.46–0.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50				
0.51–0.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50					
0.56–0.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50						
0.61–0.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50							
0.66–0.70	2.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50								
0.71–0.75	2.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50									
0.76–0.80	2.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50										
0.81–0.85	2.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50											
0.86–0.90	2.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50												
0.91–0.95	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50													
0.96–1.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50														
1.01–1.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50															
1.06–1.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50																
1.11–1.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50																	
1.16–1.20	3.25	3.30	3.35	3.40	3.45	3.50	3.50																		
1.21–1.25	3.30	3.35	3.40	3.45	3.50	3.50																			
1.26–1.30	3.35	3.40	3.45	3.50	3.50																				
1.31–1.35	3.40	3.45	3.50	3.50																					
1.36–1.40	3.45	3.50	3.50																						
1.41–1.45	3.50	3.50																							
1.46–1.50	3.50																								

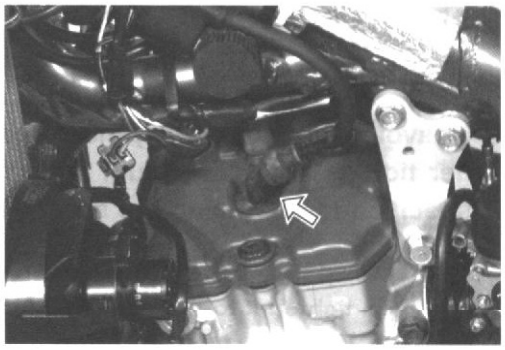
How to use this chart:

I. Measure tappet clearance when the engine is cold.
II. Measure present shim size.
III. Match clearance in vertical column with present shim size in horizontal column.

Example:

Tappet clearance is	0.38 mm
Present shim size	2.90 mm
Shim size to be used	3.05 mm

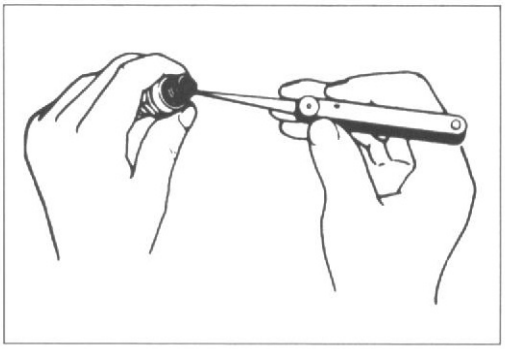
SPARK PLUG



Inspect every 6 000 km (4 000 miles, 6 months).
Replace every 12 000 km (7 500 miles, 12 months).

- Remove the fuel tank. (☞ 4-2)
- Disconnect the spark plug cap and remove the spark plug.

	Cold type	Standard	Hot type
NGK	CR9E	CR8E	CR7E
DENSO	U27ESR-N	U24ESR-N	U22ESR-N

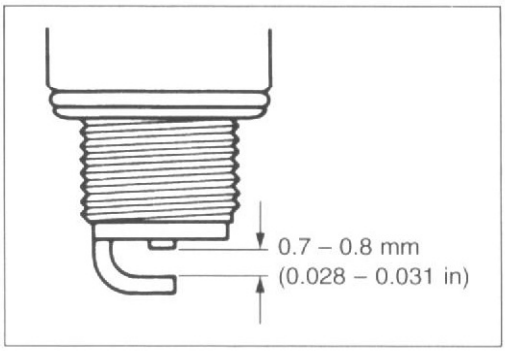


CARBON DEPOSITS

Check to see if there are carbon deposits on the spark plug. If carbon is deposited, remove it using a spark plug cleaner machine or carefully use a tool with a pointed end.

SPARK PLUG GAP

Measure the spark plug gap using a thickness gauge. If the spark plug gap is out of specification, adjust the gap.



DATA Spark plug gap
Standard: 0.7 – 0.8 mm (0.028 – 0.031 in)

TOOL 09900-20803: Thickness gauge

ELECTRODE

Check the condition of the electrode.

If the electrode is extremely worn or burnt, replace the spark plug with a new one.

Also, replace the spark plug if it has a broken insulator, damaged threads, etc.

⚠ CAUTION

Check the thread size and reach when replacing the spark plug. If the reach is too short, carbon will be deposited on the screw portion of the spark plug hole and engine damage may result.

SPARK PLUG INSTALLATION

⚠ CAUTION

To avoid damaging the cylinder head threads; first, finger tighten the spark plug, and then tighten it to the specified torque using the spark plug wrench.

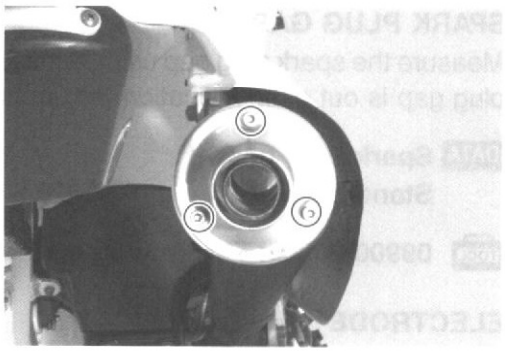
- Insert the spark plug and finger tighten it to the cylinder head, and then tighten it to the specified torque.

Spark plug: 11 N·m (1.1 kgf-m, 8.0 lb-ft)

SPARK ARRESTER (FOR E-03, 28, 33)

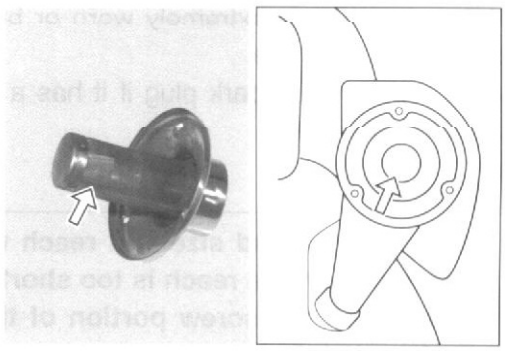
Clean every 6 000 km (4 000 miles, 6 months).

- Remove the spark arrester.



- Remove the carbon deposits from spark arrester and muffler.
- Tighten the spark arrester bolts to the specified torque.

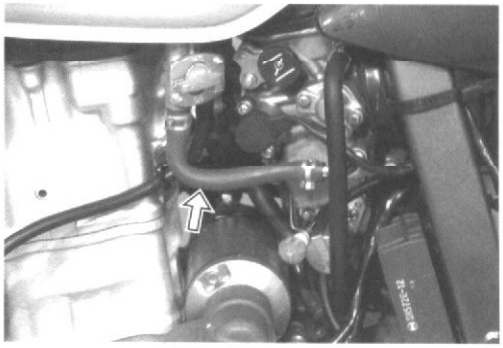
Spark arrester bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)



FUEL LINE

Inspect every 6 000 km (4 000 miles, 6 months).
Replace every four years.

Inspect the fuel hose for damage and fuel leakage. If any damages are found, replace the fuel hoses with new ones.



ENGINE OIL AND OIL FILTER

ENGINE OIL
Replace initially at 1 000 km (600 miles, 1 month) and every 6 000 km (4 000 miles, 6 months) thereafter.

ENGINE OIL FILTER
Replace initially at 1 000 km (600 miles, 1 month) and every 18 000 km (11 000 miles, 18 months) thereafter.

The oil should be changed while the engine is warm. Oil filter replacement at the above intervals, should be done together with the engine oil change.

ENGINE OIL REPLACEMENT

- Place an oil pan below the engine, and then drain the oil by removing the engine oil drain plugs (①, ②) and engine oil filler cap ③.
- Tighten the engine oil drain plugs (①, ②) to the specified torque, and then pour the new oil through the oil filler hole. When performing an oil change (without oil filter replacement), the engine will hold about 1.7 L (1.8 US qt, 1.5 Imp qt) of oil. Use an engine oil that meets API service classifications SF or SG and that has a viscosity rating of SAE 10W-40.

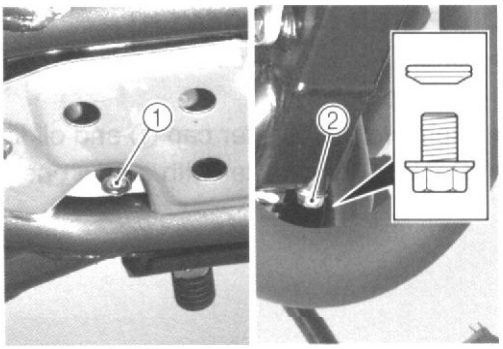
Engine oil drain plug
(on the crankcase) ①: 21 N·m (2.1 kgf-m, 15.0 lb-ft)
(on the frame) ②: 18 N·m (1.8 kgf-m, 13.0 lb-ft)

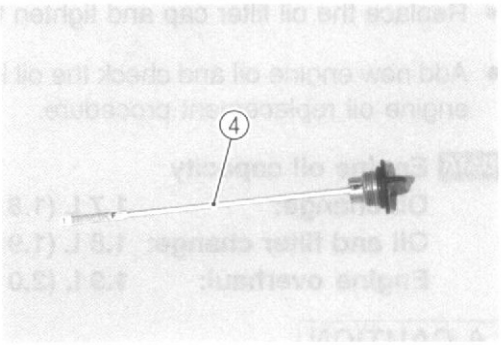
⚠ CAUTION

When installing the engine oil drain plug ② with gasket, face the taper of gasket to drain plug as shown.

- Make sure that the engine is cooled.
- Place the motorcycle on level ground and hold it vertically.
- Install the oil filler cap ③.
- Start the engine and allow it to run for three minutes at idling speed.
- Turn off the engine and wait about three minutes, and then check the oil level on the dipstick ④. The oil level should be between the "L" (low) and "F" (full) level lines. If the oil level is lower than the "L" level line, add oil to the "F" level line.

NOTE:
Engine oil expands and oil level increase when the engine oil is hot.



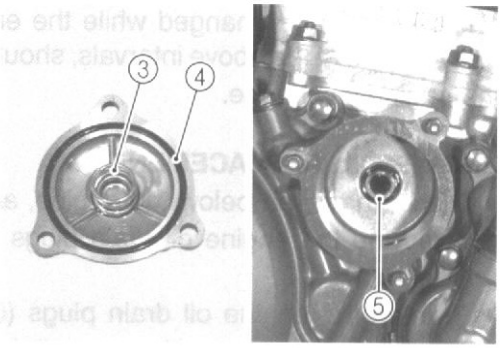


OIL FILTER REPLACEMENT

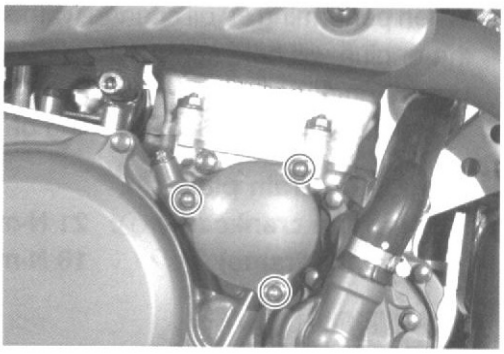
- Drain the engine oil as described in the engine oil replacement procedure.
- Remove the oil filter cap ① and oil filter ②.
- Replace the oil filter with a new one.

NOTE:
Before replacing the oil filter cap, make sure that the spring ③ and a new O-ring ④ are installed correctly.

- Make sure that the O-ring ⑤ behind the filter is in the correct position.



- Replace the oil filter cap and tighten the nut securely.
- Add new engine oil and check the oil level as described in the engine oil replacement procedure.



DATA Engine oil capacity

Oil change:	**1.7 L (1.8 US qt, 1.5 Imp qt)**
Oil and filter change:	**1.8 L (1.9 US qt, 1.6 Imp qt)**
Engine overhaul:	**1.9 L (2.0 US qt, 1.7 Imp qt)**

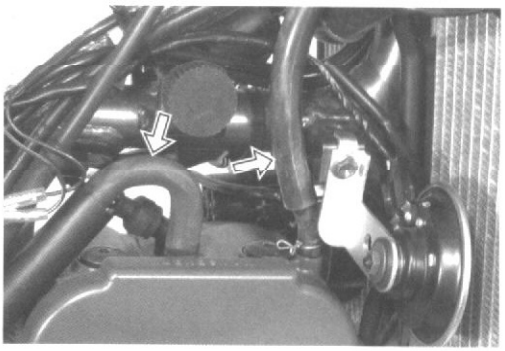
⚠ CAUTION

When reassembling the oil filter, make sure that the oil filter is installed as shown above. If the filter is installed improperly, serious engine damage may result.

ENGINE OIL HOSES

Inspect initially at 1 000 km (600 miles, 1 month) and every 6 000 km (4 000 miles, 6 months) thereafter.

Inspect the engine oil hoses for damage and oil leakage. If any damages are found, replace the engine oil hoses with new ones.



THROTTLE CABLE PLAY (CARBURETOR)

Inspect initially at 1 000 km (600 miles, 1 month) and every 6 000 km (4 000 miles, 6 months) thereafter.

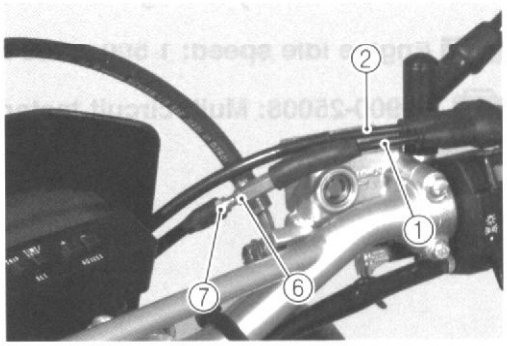
- Remove the fuel tank. (☞ 4-2)

A twin throttle cable system is used in this motorcycle. Cable ① is for pulling and cable ② is for returning. To adjust the cable play, adjust the returning cable first and then adjust the pulling cable.

RETURNING CABLE PLAY

The returning cable should be adjusted to have a thread length Ⓐ of 3 mm (0.12 in) as shown. If the adjustment is necessary, adjust the thread length in the following way:

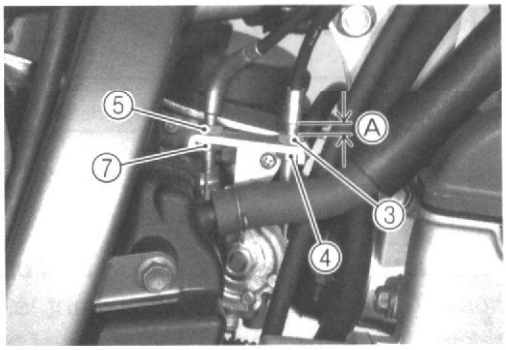
- Loosen the locknut ③.
- Turn the nut ④ to obtain the thread length Ⓐ of 3 mm (0.12 in).
- Tighten the locknut ③ securely.



PULLING CABLE PLAY

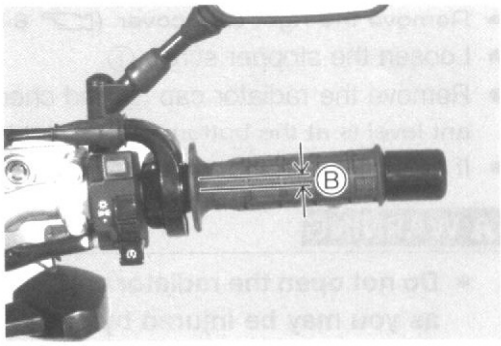
The pulling cable should be adjusted to have a cable play Ⓑ of 2 – 4 mm (0.08 – 0.16 in) as shown. If the adjustment is necessary, adjust the cable play in the following way:

- Loosen the locknuts (⑤, ⑥).
- Turn the adjuster ⑦ or ⑧ to obtain the cable play Ⓑ of 2 – 4 mm (0.08 – 0.16 in).
- Tighten the locknuts (⑤, ⑥) securely.



⚠ WARNING

After the adjustment is completed, check that handlebar movement does not raise the engine idle speed and that the throttle grip returns smoothly and automatically.



ENGINE IDLE SPEED (CARBURETOR)

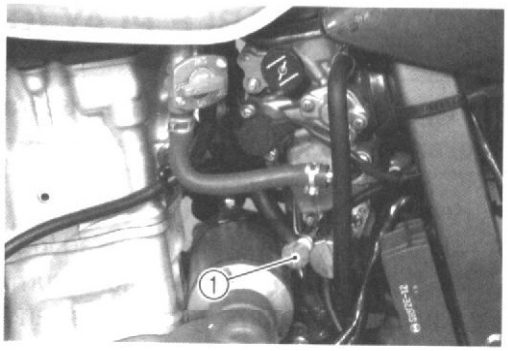
Inspect initially at 1 000 km (600 miles, 1 month) and every 6 000 km (4 000 miles, 6 months) thereafter.

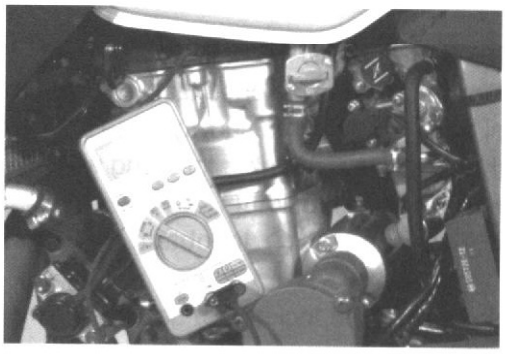
NOTE:
Make this adjustment when the engine is hot.

- Connect the multi circuit tester to the high-tension cord.
- Start the engine and set the engine idle speed between 1 400 and 1 600 r/min by turning the throttle stop screw ①.

DATA Engine idle speed: 1 500 ± 100 r/min

TOOL 09900-25008: Multi circuit tester set





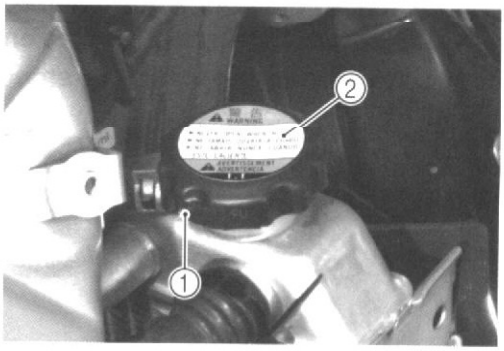
ENGINE COOLANT

Replace every two years.

ENGINE COOLANT LEVEL CHECK

NOTE:
This motorcycle has an overflow tank at the end of the breather hose. Therefore, the engine coolant level may decrease while riding. Check the engine coolant level before every ride.

- Remove the right side cover. (☞ 6-2)
- Loosen the stopper screw ①.
- Remove the radiator cap ② and check that the engine coolant level is at the bottom of the inlet hole.
- If not, replenish the radiator with the specified coolant.

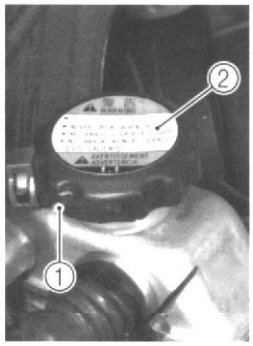


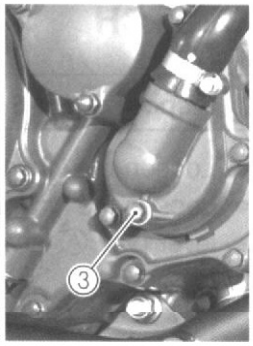
⚠ WARNING

*** Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.**
*** Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.**

ENGINE COOLANT REPLACEMENT

- Remove the right side cover. (☞ 6-2)
- Loosen the stopper screw ①.
- Remove the radiator cap ② and drain plug ③, and then drain the engine coolant.
- Tighten the drain plug ③.
- Pour the specified engine coolant slowly into the radiator.





LLC Engine coolant:
Use an antifreeze designed for aluminum radiators mixed with distilled water only.
Water/antifreeze mixture ratio: 50:50 – 40:60

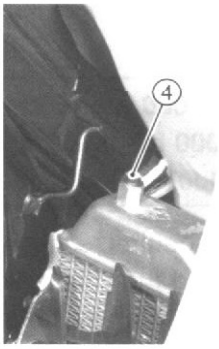
NOTE:
For engine coolant information, refer to page 5-4.

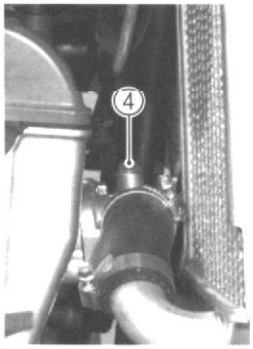
Air bleeding the engine coolant circuit

- Bleed air from the air bleeder bolt ④.
- Tighten the air bleeder bolt ④ to the specified torque.

Air bleeder bolt: 5.5 N·m (0.55 kgf-m, 4.0 lb-ft)

- Add engine coolant up to the radiator inlet.
- Tighten the radiator cap securely.
- After warming up and cooling down the engine, add the specified engine coolant.



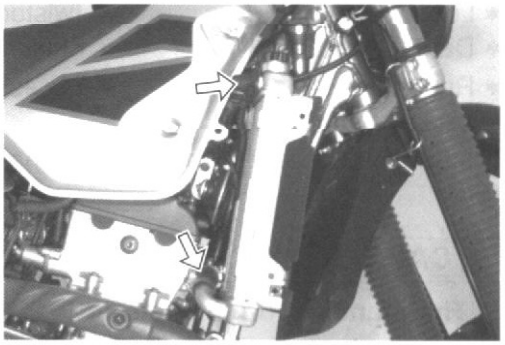


DATA Engine coolant capacity:
1 250 ml (1.3 US qt, 1.1 Imp qt)

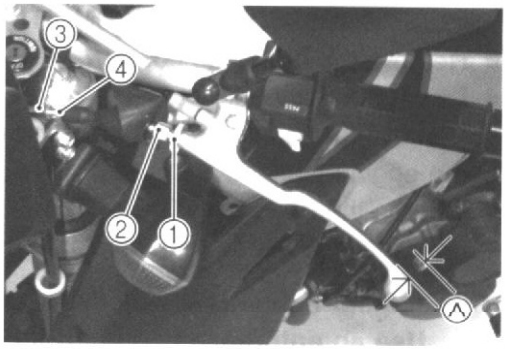
RADIATOR HOSES

Inspect every 6 000 km (4 000 miles, 6 months).

Inspect the radiator hoses for damage and engine coolant leakage. If any damages are found, replace the radiator hoses with new ones.



CLUTCH



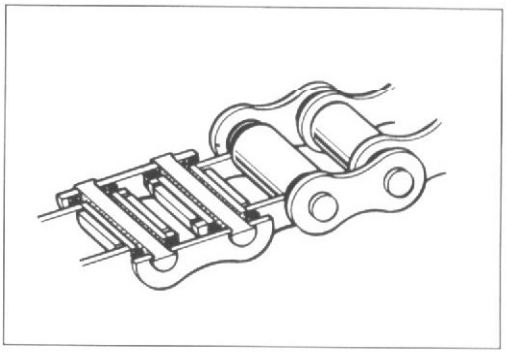
Inspect every 6 000 km (4 000 miles, 6 months).

- Loosen the locknut ① and turn the adjuster ② fully in.
- Loosen the locknut ③ and turn the adjuster ④ until the clutch lever play Ⓐ is within specification.

DATA Clutch lever play Ⓐ: 10 – 15 mm (0.4 – 0.6 in)

- Tighten the locknuts.

DRIVE CHAIN



Inspect initially at 1 000 km (600 miles, 1 month) and every 6 000 km (4 000 miles, 6 months) thereafter. Lubricate every 1 000 km (600 miles).

With the transmission in neutral, support the motorcycle using a jack or wooden block and turn the rear wheel slowly by hand. Visually inspect the drive chain for the possible damages listed below.

* Loose pins
* Damaged rollers
* Rusted links
* Missing O-ring seals
* Twisted or seized links
* Kinked or binding links
* Excessive wear

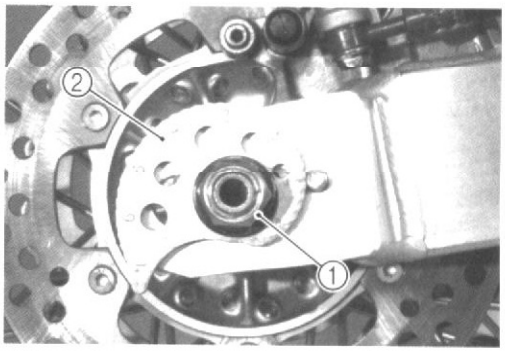
If any damages are found, replace the drive chain with a new one.

⚠ CAUTION

The standard drive chain is RK520KZO. SUZUKI recommends to use this standard drive chain as a replacement.

NOTE:

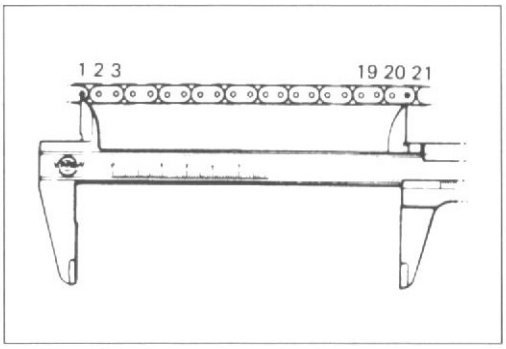
When replacing the drive chain, replace the drive chain and sprockets as a set.



CHECKING AND ADJUSTING

- Remove the cotter pin. (For E-03, 28, 33)
- Remove the rear axle nut ①.
- Tense the drive chain fully by turning both drive chain adjusters ②.

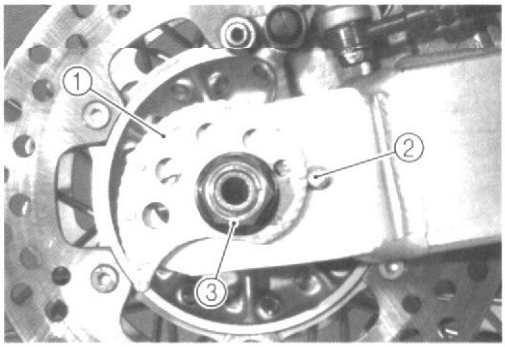
- Count out 21 pins (20-pitch) on the drive chain and measure the distance between the two points. If the distance exceeds the service limit, replace the drive chain with a new one.



TOOL 09900-20103: Vernier calipers

DATA Drive chain 20-pitch length
Service Limit: 319.4 mm (12.57 in)

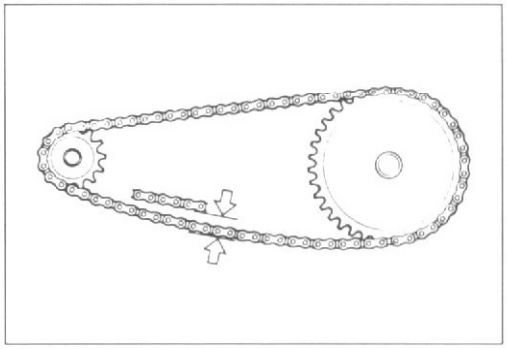
- Place the motorcycle on the side stand.
- Loosen or tighten both chain adjusters ① until there is 40 – 50 mm (1.6 – 2.0 in) of slack at the middle of the chain between the engine and rear sprockets as shown. The reference marks ② on both sides of the swingarm and the edge of each chain adjuster must be aligned to ensure that the front and rear wheels are correctly aligned.



DATA Drive chain slack: 40 – 50 mm (1.6 – 2.0 in)

- After adjusting the drive chain, tighten the rear axle nut ③ to the specified torque.

Rear axle nut:
100 N·m (10.0 kgf-m, 72.5 lb-ft) .. For E-03, 28, 33
110 N·m (11.0 kgf-m, 79.5 lb-ft) .. For the other countries

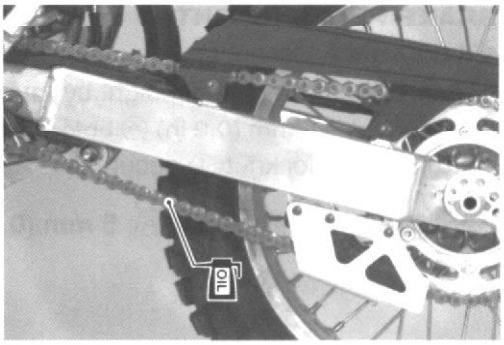


CLEANING AND LUBRICATING

- Clean the drive chain with kerosine. If the drive chain tends to rust quickly, the intervals must be shortened.

⚠ CAUTION

Do not use trichlene, gasoline or any similar fluids. These fluids have too great a dissolving power for this chain and, what is more important, they can damage the O-rings (or seals) confining the grease in the bushing to pin clearance. Remember, high durability comes from the presence of grease in that clearance.



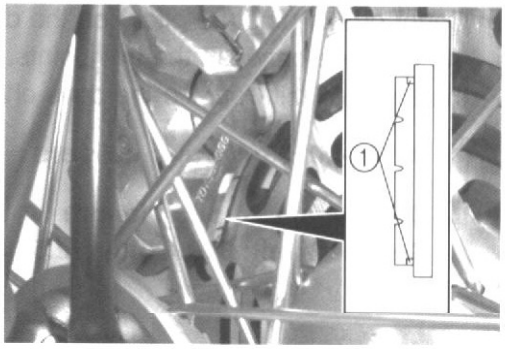
- After cleaning and drying the chain, oil it with a heavyweight engine oil.

BRAKES

Inspect initially at 1 000 km (600 miles, 1 month) and every 6 000 km (4 000 miles, 6 months) thereafter.

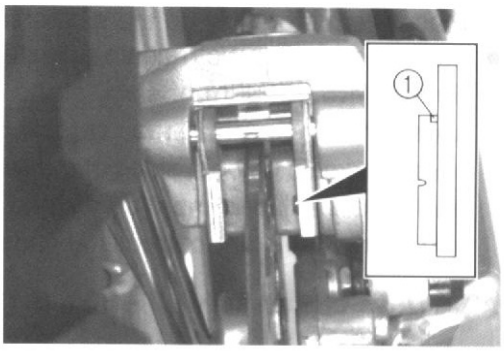
BRAKE PADS

The extent of brake pad wear can be checked by observing the limit line ① on the brake pad. When the wear exceeds the grooved limit line, replace the pads with new ones. (☞ 6-42 and 6-51)



⚠ CAUTION

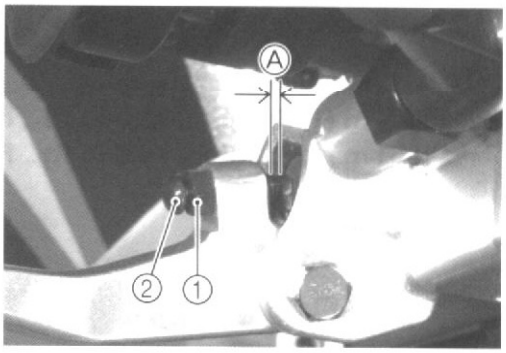
Replace the brake pads as a set, otherwise braking performance will be adversely affected.



BRAKE LEVER PLAY

- Loosen the locknut ①.
- Adjust the brake lever play by turning the adjuster ② until the lever is 0.1 – 0.3 mm (0.004 – 01010 in) Ⓐ.
- Tighten the locknut ① securely.

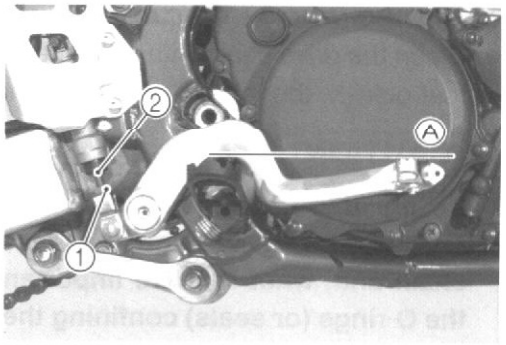
DATA Brake lever play Ⓐ: 0.1 – 0.3 mm (0.004 – 0.010 in)



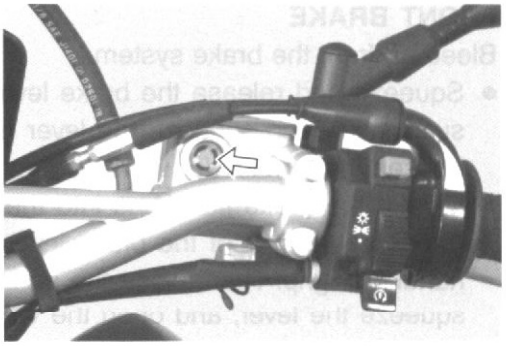
BRAKE PEDAL HEIGHT

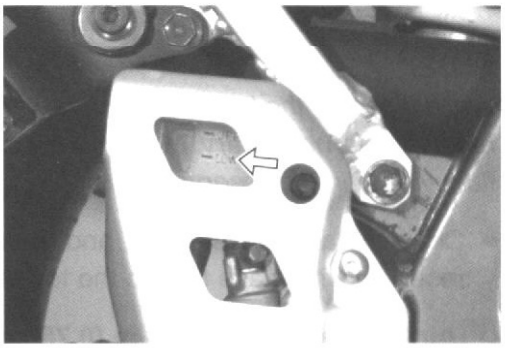
- Loosen the locknut ①.
- Adjust the brake pedal height by turning the push rod ② until the pedal is 5 mm (0.2 in) Ⓐ below the top face of the footrest.
- Tighten the locknut ① securely.

DATA Brake pedal height Ⓐ: 5 mm (0.2 in)



BRAKE FLUID





Inspect every 6 000 km (4 000 miles, 6 months).
Replace every two years.

BRAKE FLUID LEVEL

- Keep the motorcycle upright and place the handlebar straight.
- Check the brake fluid level by observing the lower limit line on the front and rear brake fluid reservoir.
- When the brake fluid level is below the lower limit line, add the specified brake fluid to the specified level.

Specification and classification: DOT 4

⚠ WARNING

*** The brake system is filled with an glycol-based brake fluid, which is classified DOT 4. Do not use or mix other types of brake fluid, such as silicone-based and petroleum-based brake fluids when refilling the brake system, otherwise serious damage to the brake system will result.**
*** Do not use any brake fluid taken from old, used, or unsealed containers.**
*** Do not reuse brake fluid left over from the last servicing or which has been stored for a long period of time.**
*** When storing brake fluid, be sure to seal the container completely and keep it out of the reach of children.**
*** When replenishing brake fluid, be sure not to get any dust or other foreign materials in the fluid.**
*** Brake fluid, if it leaks, will interfere with safe running and immediately discolor painted surfaces. Check the brake hoses and hose joints for cracks and oil leakage before riding.**

AIR BLEEDING THE BRAKE FLUID CIRCUIT

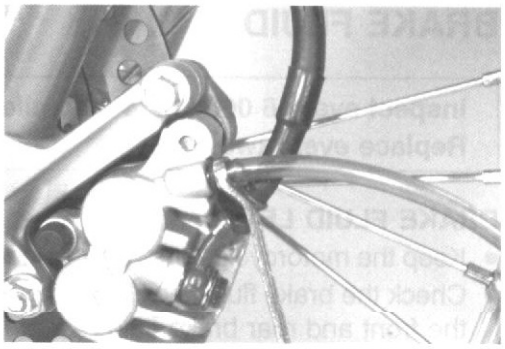
Air trapped in the brake fluid circuit acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus interferes with the full braking performance of the brake caliper. The presence of air is indicated by "sponginess" of the brake lever and also by lack of braking force. Considering the danger to which such trapped air exposes the machine and rider, it is essential that, after remounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:

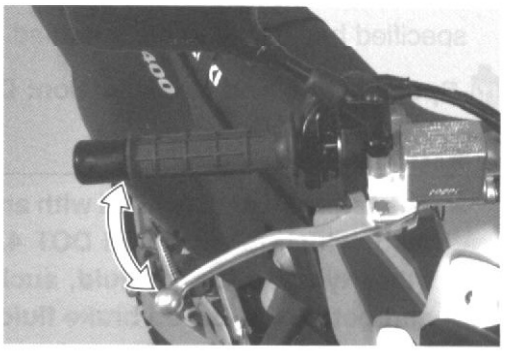
- Fill the master cylinder reservoir to the top of the inspection window. Replace the reservoir cap to prevent dirt from entering.
- Attach a hose to the air bleeder valve, and insert the free end of the hose into a receptacle.

FRONT BRAKE

Bleed air from the brake system.

- Squeeze and release the brake lever several times in rapid succession and squeeze the lever fully without releasing it. Loosen the air bleeder valve by turning it a quarter of a turn so that the brake fluid runs into the receptacle, this will remove the tension of the brake lever causing it to touch the handlebar grip. Then, close the air bleeder valve, pump and squeeze the lever, and open the valve. Repeat this process until the fluid flowing into the receptacle no longer contains air bubbles.





NOTE:

While bleeding the brake system, replenish the brake fluid in the reservoir as necessary. Make sure that there is always some fluid visible in the reservoir.

- Close the air bleeder valve, and disconnect the hose. Fill the reservoir with brake fluid to the top of the inspection window.

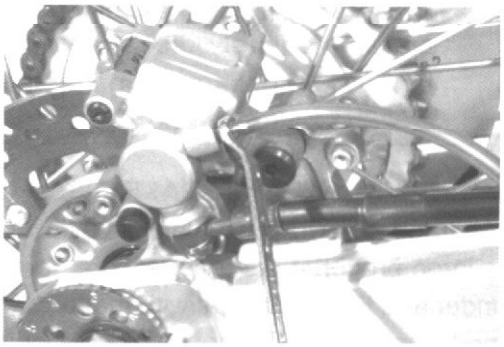
Air bleeder valve: 7.5 N·m (0.75 kgf-m, 5.5 lb-ft)

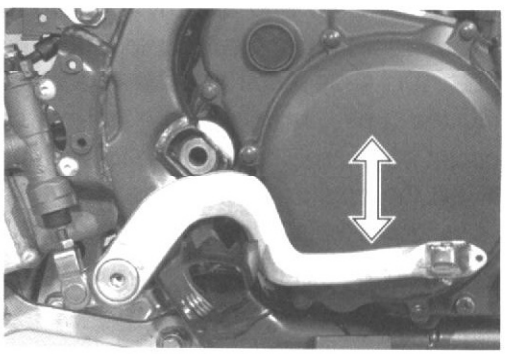
⚠ CAUTION

Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials, etc.

REAR BRAKE

The only difference between bleeding the front and rear brake is that the rear master cylinder is actuated by a pedal.

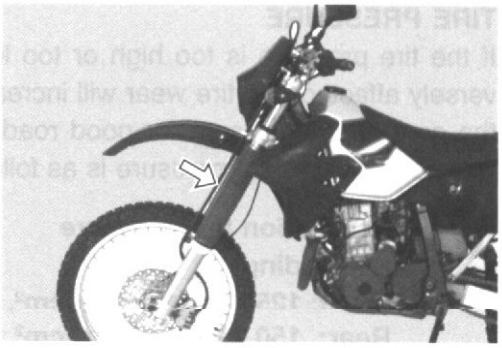


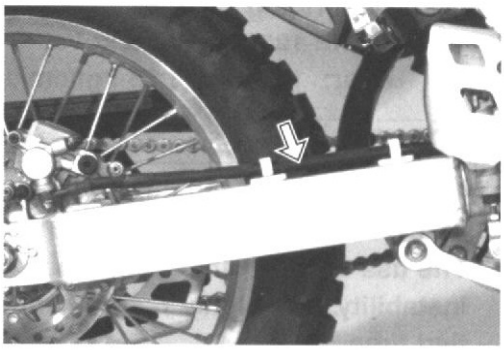


BRAKE HOSES

Inspect every 6 000 km (4 000 miles, 6 months).
Replace every four years.

- Check the brake hoses for leakage, cracks, wear and damage. If any damages are found, replace the brake hoses with new ones.



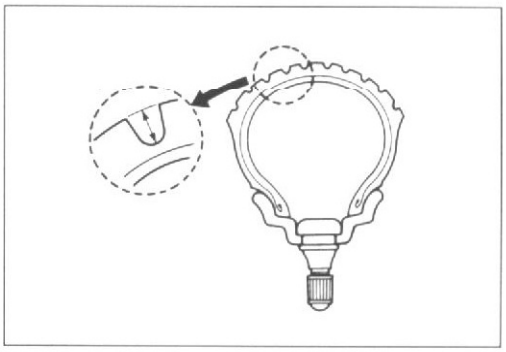


TIRES

Inspect every 6 000 km (4 000 miles, 6 months).

TIRE TREAD CONDITION

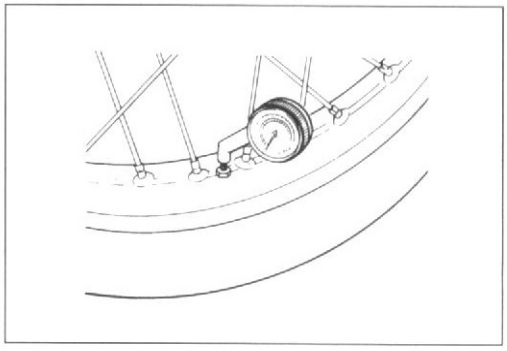
Operating the motorcycle with excessively worn tires will decrease riding stability and consequently invite a dangerous situation. It is highly recommended to replace a tire when the remaining depth of the tire tread reaches the following specification.



TOOL 09900-20805: Tire depth gauge

DATA Tire tread depth
Service Limit: Front 3.0 mm (0.12 in)
Rear 3.0 mm (0.12 in)

TIRE PRESSURE



If the tire pressure is too high or too low, steering will be adversely affected and tire wear will increase. Therefore, maintain the correct tire pressure for good roadability and a longer tire life. Cold inflation tire pressure is as follows.

DATA Cold inflation tire pressure

Solo riding

Front: 125 kPa (1.25 kgf/cm², 18 psi)

Rear: 150 kPa (1.50 kgf/cm², 22 psi)

Dual riding

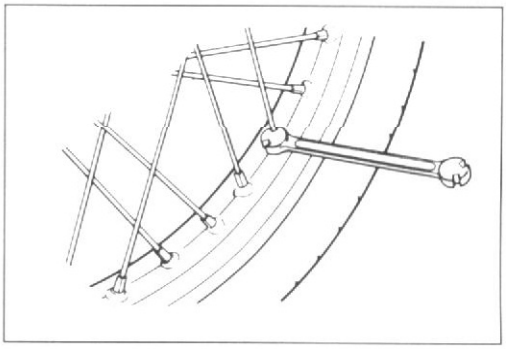
Front: 125 kPa (1.25 kgf/cm², 18 psi)

Rear: 175 kPa (1.75 kgf/cm², 25 psi)

⚠ CAUTION

The standard tire fitted on this motorcycle is a 80/100-21 51P for the front and a 120/90-18 65P for the rear. The use of tires other than those specified may cause instability. It is highly recommended to use the specified tires.

SPOKE NIPPLES

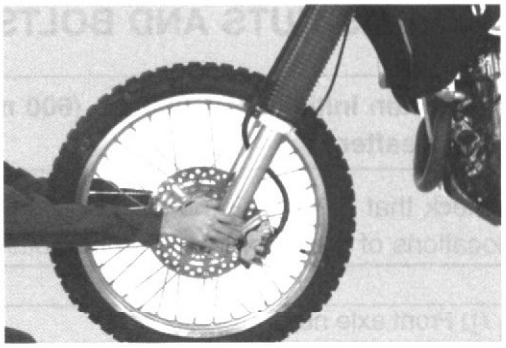


Inspect initially at 1 000 km (600 miles, 1 month) and every 6 000 km (4 000 miles, 6 months) thereafter.

Make sure that the nipples are tight. If necessary, tighten them with a spoke nipple wrench.

Spoke nipple: 3.0 N·m (0.3 kgf-m, 2.0 lb-ft)

STEERING



Inspect initially at 1 000 km (600 miles, 1 month) and every 12 000 km (7 500 miles, 12 months) thereafter.

The steering should be adjusted properly for smooth turning of the handlebar and safe operation. Overtight steering prevents smooth turning of the handlebar and too loose steering will cause poor stability. Check that there is no play in the front fork. Support the motorcycle so that the front wheel is off the ground. With the wheel facing straight ahead, grasp the lower fork tubes near the axle and pull forward. If play is found, adjust the steering. (☞ 6-22)

FRONT FORK

Inspect every 12 000 km (7 500 miles, 12 months).

Inspect the front forks for oil leakage, scoring, or scratches on the outer surface of the inner tubes. If any damages are found, replace the front fork with a new one. (☞ 6-11 to 6-16)

REAR SUSPENSION

Inspect every 12 000 km (7 500 miles, 12 months).

Inspect the rear shock absorber for oil leakage and damage. If any damages are found, replace the rear shock absorber with a new one.

EVAPORATIVE EMISSION CONTROL SYSTEM (FOR E-33)

Inspect every 12 000 km (7 500 miles, 12 months).
Replace vapor hoses every four years.

PAIR (AIR SUPPLY) SYSTEM (FOR E-02, 19, 54)

Inspect every 12 000 km (7 500 miles, 12 months).

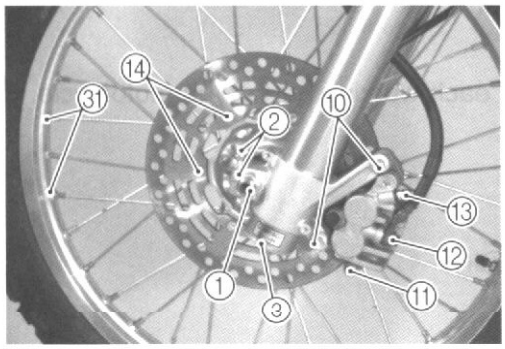
(☞ 3-65 and 3-66)

CHASSIS NUTS AND BOLTS

Tighten initially at 1 000 km (600 miles, 1 month) and every 6 000 km (4 000 miles, 6 months) thereafter.

Check that all chassis nuts and bolts are tightened to their specified torque. (Refer to page 2-25 for the locations of the following nuts and bolts.)

ITEM	N·m	kgf-m	lb-ft
① Front axle nut	42	4.2	30.5
② Front axle pinch bolt	18	1.8	13.0
③ Front fork damper rod bolt	80	8.0	58.0
④ Front fork lower clamp bolt	32	3.2	23.0
⑤ Front fork upper clamp bolt	30	3.0	21.5
⑥ Front fork cap bolt	23	2.3	16.5
⑦ Steering stem head nut	90	9.0	65.0
⑧ Handlebar clamp bolt	23	2.3	16.5
⑨ Front brake master cylinder mounting bolt	10	1.0	7.0
⑩ Front brake caliper mounting bolt	26	2.6	19.0
⑪ Front brake pad mounting pin	18	1.8	13.0
⑫ Brake hose union bolt (front & rear)	23	2.3	16.5
⑬ Brake air bleeder valve (front & rear)	7.5	0.75	5.5
⑭ Brake disc mounting bolt (front & rear)	10	1.0	7.0
⑮ Swingarm pivot nut	77	7.7	55.5
⑯ Rear brake pedal bolt	29	2.9	21.0
⑰ Rear shock absorber mounting nut (upper & lower)	55	5.5	40.0
⑱ Cushion rod mounting nut	100	10.0	72.5
⑲ Cushion lever mounting nut (front)	100	10.0	72.5
⑳ Cushion lever mounting nut (center)	100	10.0	72.5
㉑ Rear axle nut — For E-03, 28, 33	100	10.0	72.5
㉑ Rear axle nut — For the other countries	110	11.0	79.5
㉒ Rear brake pad mounting pin	18	1.8	13.0
㉓ Rear brake master cylinder mounting bolt	10	1.0	7.0
㉔ Rear brake rod locknut	18	1.8	13.0
㉕ Seat rail mounting nut (upper)	35	3.5	25.5
㉖ Seat rail mounting bolt (lower)	35	3.5	25.5
㉗ Rear sprocket nut	30	3.0	21.5
㉘ Side-stand bolt	50	5.0	36.0
㉙ Side-stand nut	55	5.5	40.0
㉚ Drive chain roller mounting bolt (upper & lower)	40	4.0	29.0
㉛ Spoke nipple	3	0.3	2.0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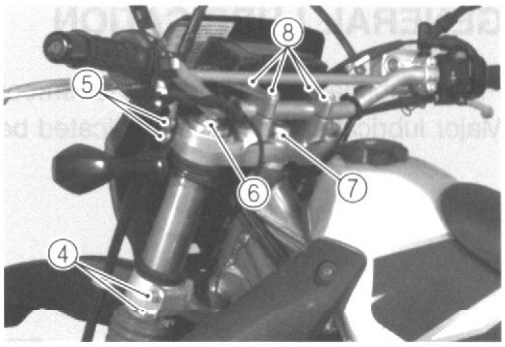
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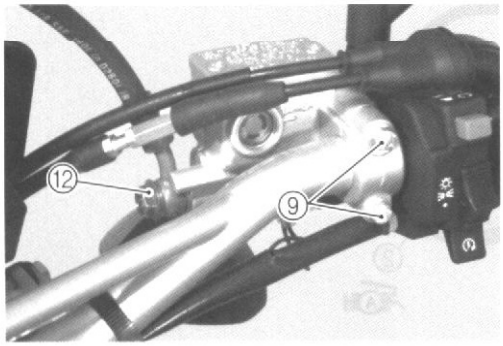
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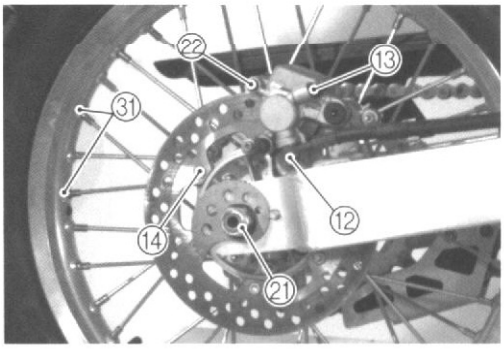
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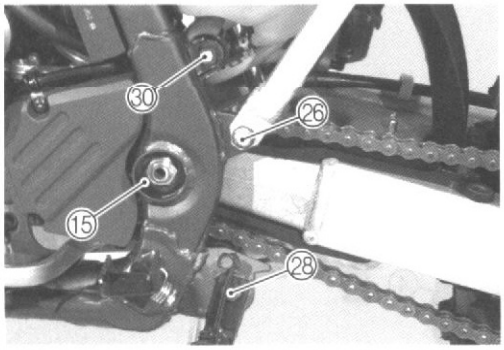
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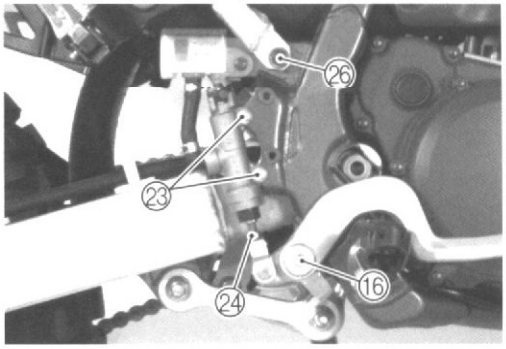
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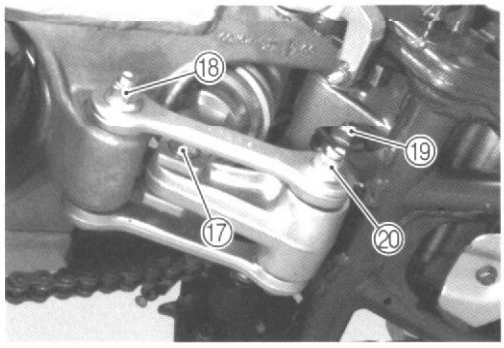
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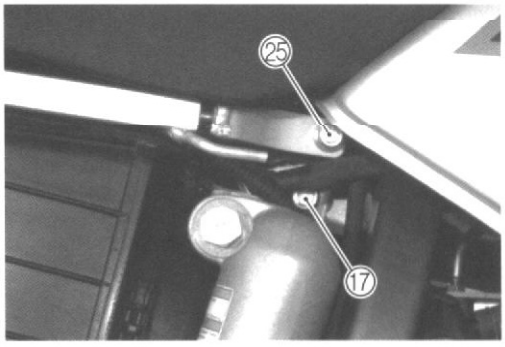
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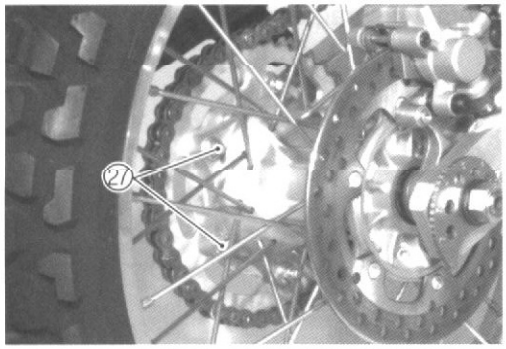
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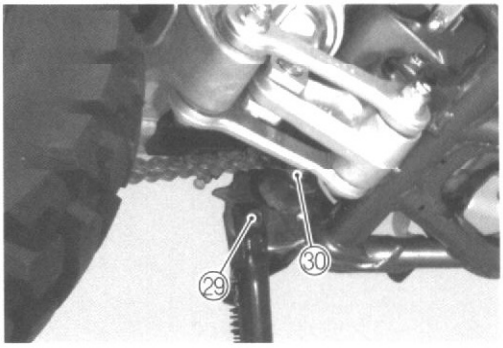
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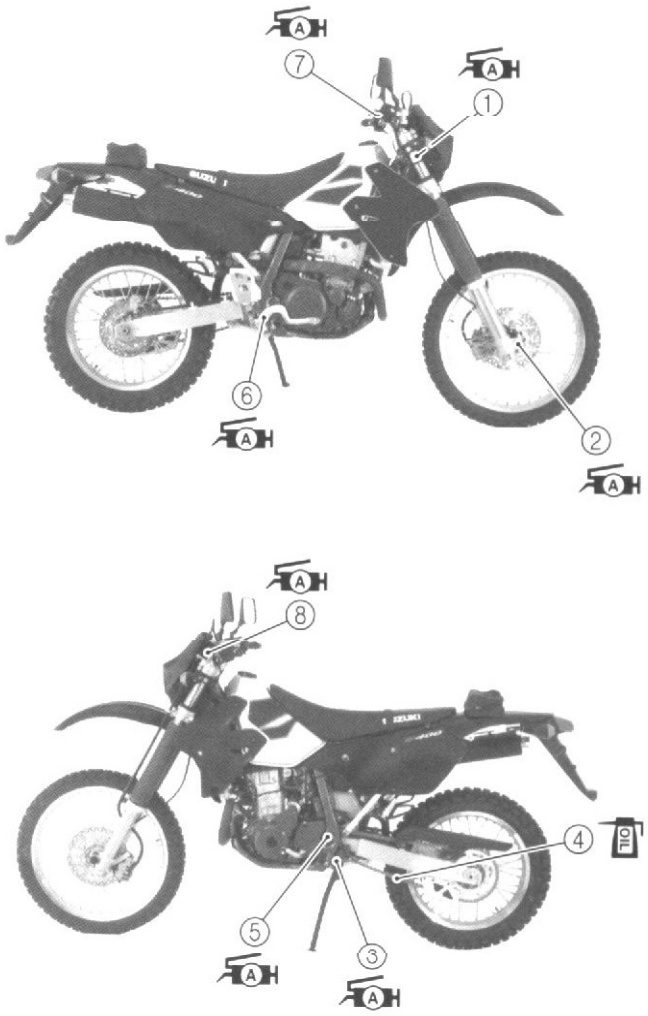
GENERAL LUBRICATION

Proper lubrication is important for smooth operation and long life of each working part of the motorcycle. Major lubrication points are indicated below.



① Speedometer cable
② Speedometer gearbox
③ Sidestand pivot and spring hook
④ Drive chain
⑤ Swingarm pivot
⑥ Brake pedal pivot
⑦ Brake lever holder
⑧ Clutch lever holder

NOTE:

* *Before lubricating each part, remove any rust and wipe off any grease, oil, dirt, or grime.*
* *Lubricate exposed parts which are subject to rust, with a rust preventative spray, especially whenever the motorcycle has been operated under wet or rainy conditions.*

COMPRESSION PRESSURE CHECK

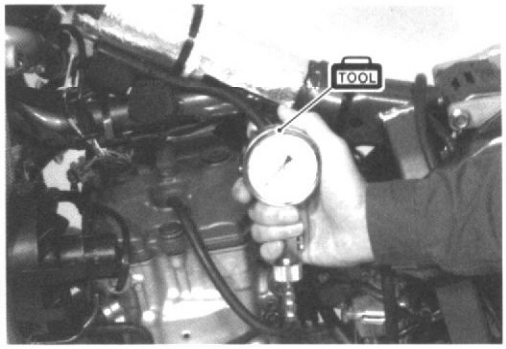
The compression pressure reading of a cylinder is a good indicator of its internal condition.
The decision to overhaul the cylinder is often based on the results of a compression test. Periodic maintenance records kept at your dealership should include compression readings for each maintenance service.

DATA Compression pressure
Standard: 950 kPa (9.5 kgf/cm², 135 psi)
(Automatic decompression actuated)

Low compression pressure can indicate any of the following conditions:
* Excessively worn cylinder walls
* Worn piston or piston rings
* Piston rings stuck in grooves
* Poor valve seating
* Ruptured or otherwise defective cylinder head gasket

NOTE:
When the compression pressure goes below specification, check the engine for conditions listed above.

COMPRESSION TEST PROCEDURE



NOTE:
* *Before testing the engine for compression pressure, make sure that the cylinder head bolts are tightened to the specified torque values and the valves are properly adjusted.*
* *Warm up the engine before testing.*
* *Make sure that the battery is fully charged.*

Remove the related parts and test the compression pressure in the following manner.
- Remove the spark plug. (☞ 2-9)
- Install the compression gauge and adaptor in the spark plug hole. Make sure that the connection is tight.
- Keep the throttle grip in the fully open position.
- Press the starter button and crank the engine for a few seconds.
- Record the maximum gauge reading as the cylinder compression.

TOOL 09915-64510: Compression gauge set
09915-63310: Adaptor

OIL PRESSURE CHECK

Check the engine oil pressure periodically. This will give a good indication of the condition of the moving parts.

DATA Oil pressure:
Above 40 kPa (0.4 kgf/cm², 5.7 psi)
Below 140 kPa (1.4 kgf/cm², 19.9 psi) **at 3 000 r/min, oil temperature at 60°C (140 °F)**

Low or high oil pressure can indicate any of the following conditions:

LOW OIL PRESSURE

* Clogged oil filter
* Oil leakage from the oil passage
* Damaged O-ring
* Defective oil pump
* Combination of the above items

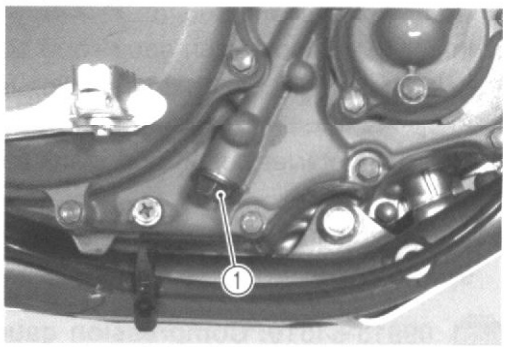
HIGH OIL PRESSURE

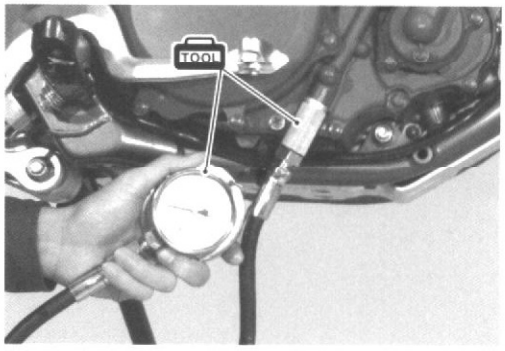
* Engine oil viscosity is too high
* Clogged oil passage
* Combination of the above items

OIL PRESSURE TEST PROCEDURE

- Connect a tachometer to the high-tension cord.
- Remove the main oil gallery plug ①.
- Install the oil pressure gauge and adaptor into the main oil gallery.
- Warm up the engine as follows:
  Summer: 10 minutes at 2 000 r/min
  Winter: 20 minutes at 2 000 r/min
- After warming up the engine, increase the engine speed to 3 000 r/min (check the tachometer), and then read the oil pressure gauge.

TOOL 09915-74510: Oil pressure gauge
09915-70610: Adapter





ENGINE

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ENGINE COMPONENTS REMOVABLE WITH ENGINE IN PLACE

The parts listed below can be removed and installed without removing the engine from the frame. Refer to the page listed in each section for removal and installation instructions.

ENGINE LEFT SIDE

PARTS	REMOVAL	INSTALLATION
Engine sprocket	3-6	3-9
Starter drive/driven gear	3-14	3-57
Neutral switch	3-14	3-57
Generator rotor	3-19	3-51
Starter clutch	3-19	3-51

ENGINE RIGHT SIDE

PARTS	REMOVAL	INSTALLATION
Exhaust pipe/muffler	3-5	3-10
Oil filter	3-14	–
Clutch pressure plate, drive plates, and driven plates	3-16	3-56
Clutch sleeve hub	3-16	3-56
Primary driven gear assembly	3-17	3-56
Oil pump idle/driven gear	3-17	3-54
Oil pump	3-18	3-54
Gearshift shaft	3-18	3-54
Gearshift cam driven gear	3-18	3-53
Balancer drive/driven gear	3-19	3-52

ENGINE CENTER

PARTS	REMOVAL	INSTALLATION
Carburetor	4-6	4-12
Starter motor	3-4	–
Cam chain tension adjuster	3-11	3-64
Cylinder head cover	3-11	3-63
Camshaft/automatic decompression assembly	3-12	3-61
Cylinder head	3-13	3-60
Cylinder	3-13	3-60
Piston	3-13	3-59
Cam chain	3-17	3-55

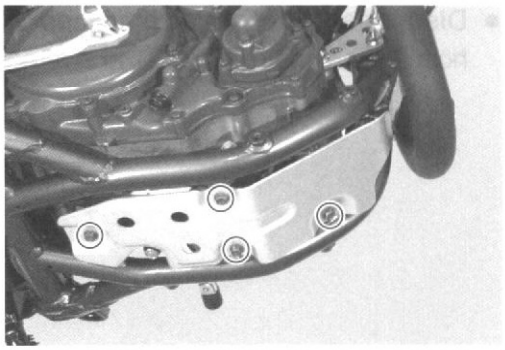
ENGINE REMOVAL AND REMOUNTING

ENGINE REMOVAL

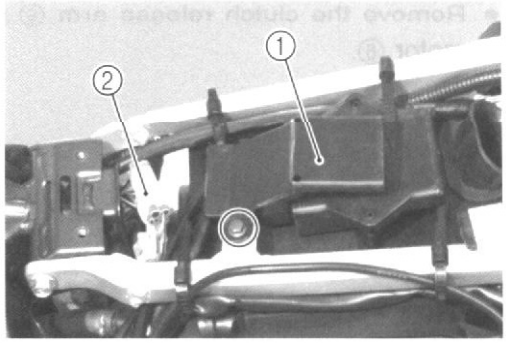
Before taking the engine out of the frame, wash the engine using a steam cleaner. Engine removal is sequentially explained in the following steps.

- Remove the seat, side covers, and frame covers. (☞ 6-2)
- Drain the engine oil. (☞ 2-11)
- Remove the carburetor. (☞ 4-6)
- Remove the radiator. (☞ 5-6 and 5-7)
- Disconnect the ⊖ battery lead wire and engine ground coupler.

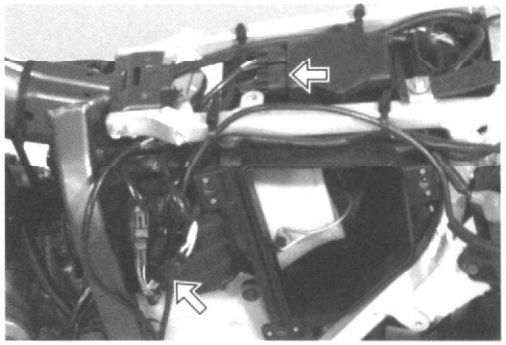
- Remove the engine plate.



- Remove the CDI unit cover ① and disconnect the neutral switch coupler ②.

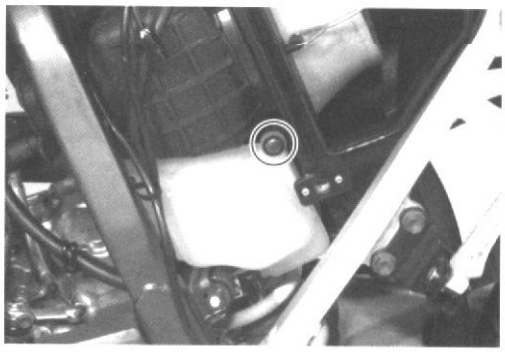


- Disconnect the generator couplers.

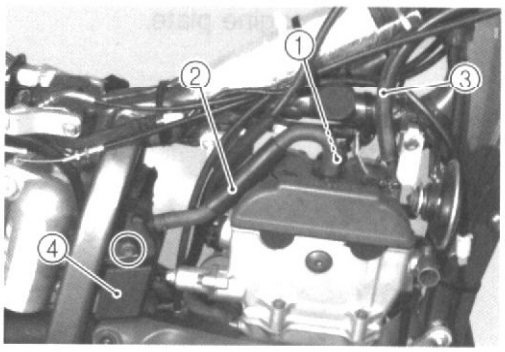


- Remove the regulator/rectifier.

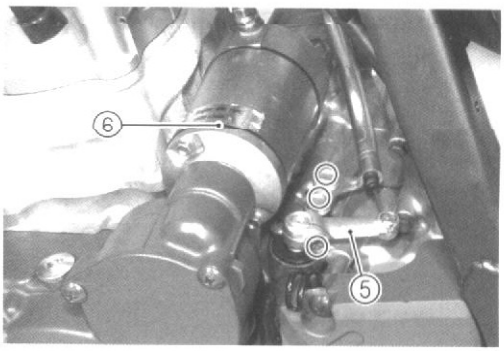
- Remove the engine coolant overflow tank mounting bolt.



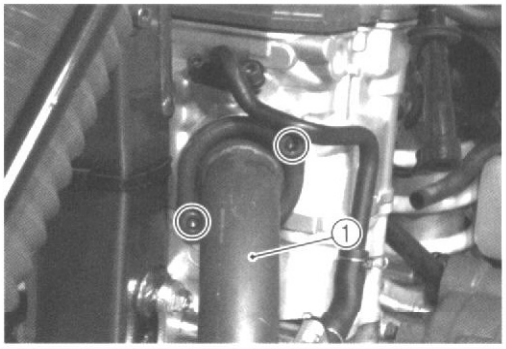
- Disconnect the spark plug cap ①, engine oil breather hose ②, engine oil hose ③, and remove the engine oil tank ④.

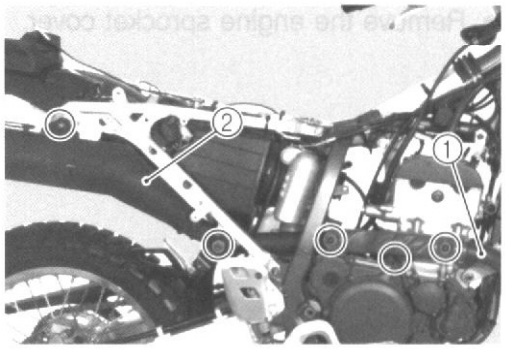


- Remove the clutch release arm ⑤ and remove the starter motor ⑥.

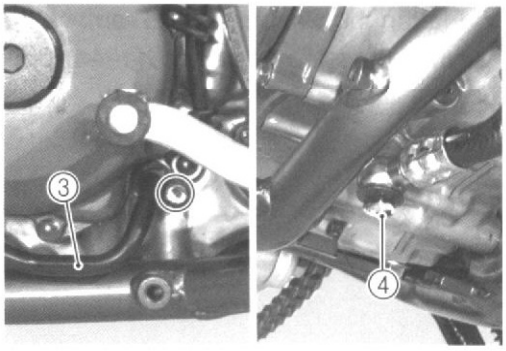


- Remove the exhaust pipe ① and muffler ②.

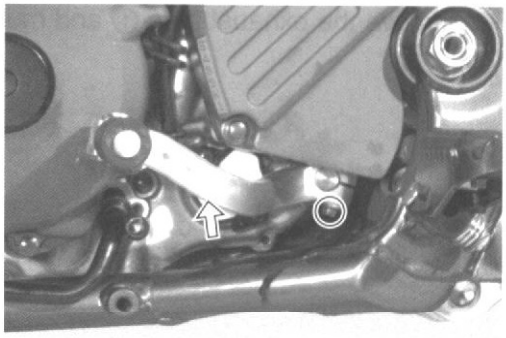




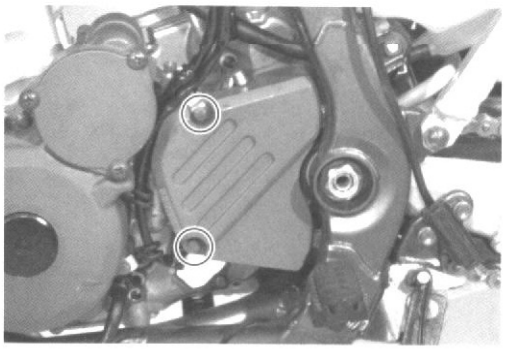
- Disconnect the engine oil pipe ③ and engine oil hose union bolt ④.



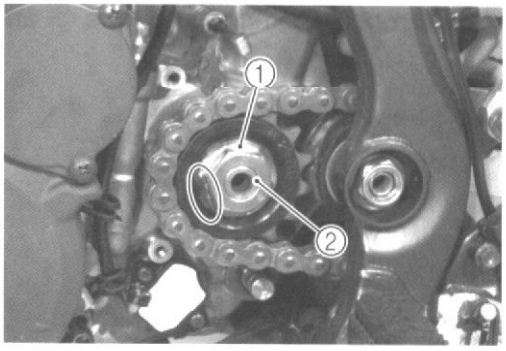
- Remove the gearshift lever.



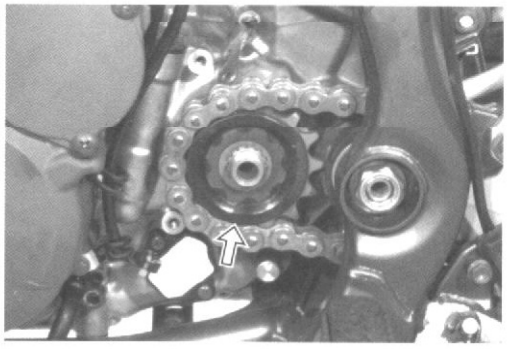
- Remove the engine sprocket cover.



- Flatten the washer ① and remove the engine sprocket nut ② while pressing down on the rear brake pedal.



- Remove the engine sprocket.

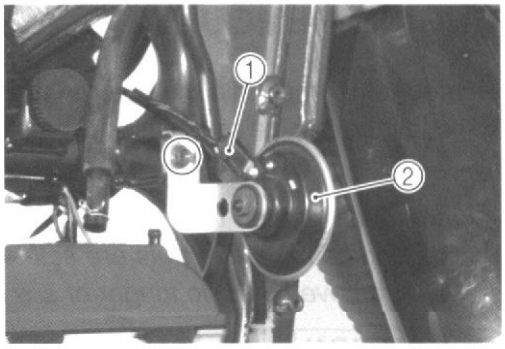


- Remove the cotter pins and brake pedal.

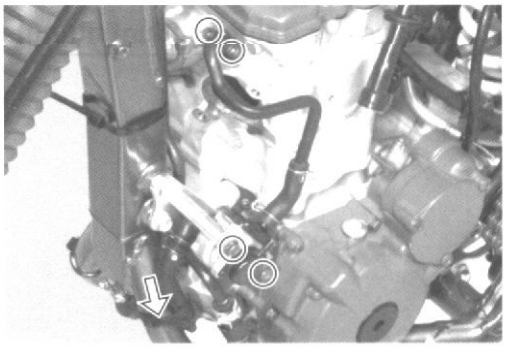
⚠ CAUTION

Replace the removed cotter pins with new ones.

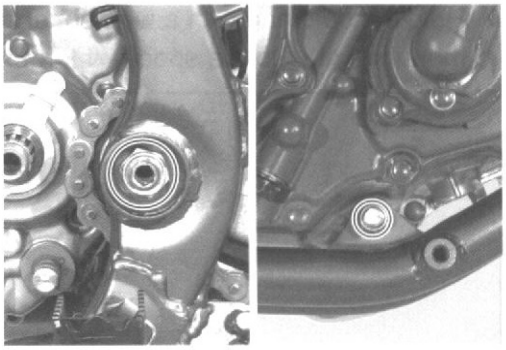
- Disconnect the horn coupler ① and remove the horn ②.

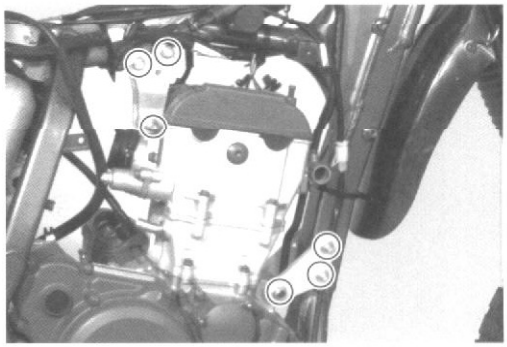


- Remove the PAIR (air supply) valve assembly. (For E-02, 19, 54)

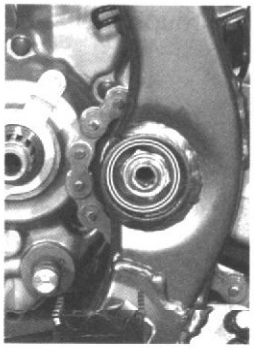


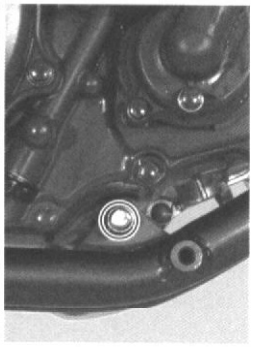
- Remove the engine from the frame.





ENGINE REMOUNTING





Remount the engine in the reverse order of engine removal.

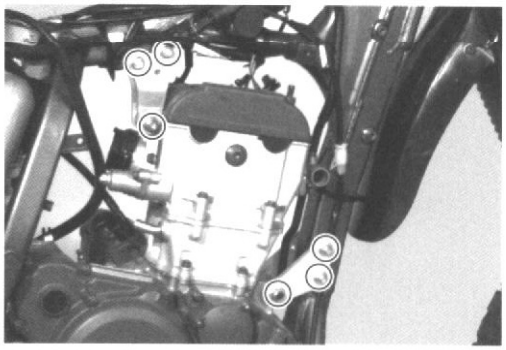
- Install the engine mounting nuts and bolts.

NOTE:

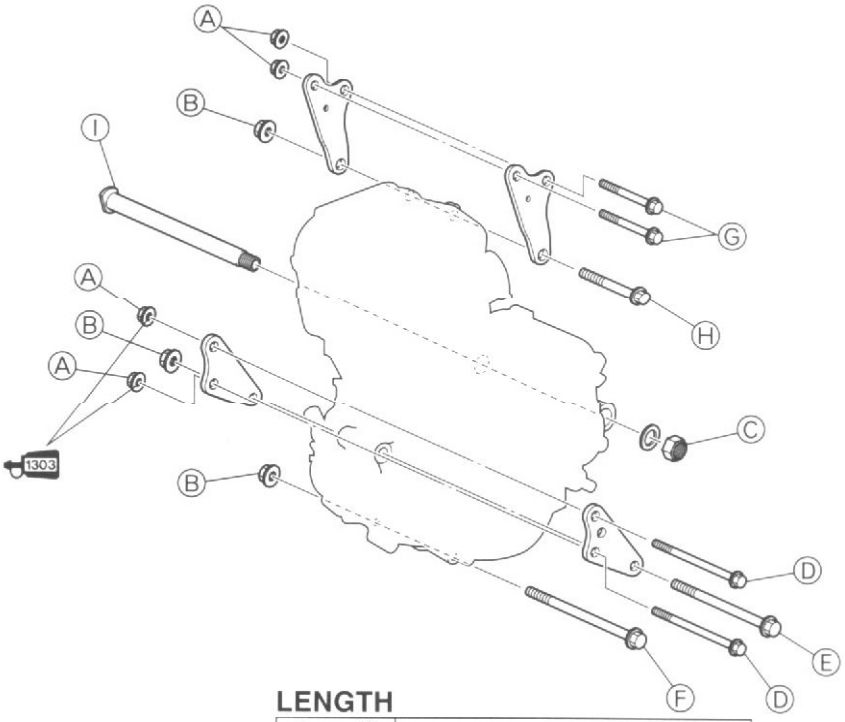
* *Temporally tighten the nuts at this stage.*
* *The engine mounting nuts are self-locking. Once the nut has been removed, it is no longer of any use.*

⚠ CAUTION

Replace the engine mounting nuts with new ones.



- Hold the bolthead with a wrench, and then tighten the engine mounting nuts to the specified torque.



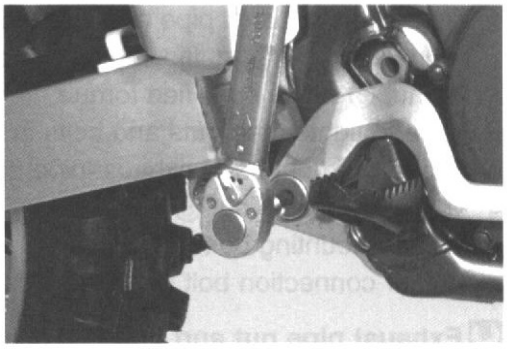
ITEM	N·m	kgf-m	lb-ft
Ⓐ	40	4.0	29.0
Ⓑ	66	6.6	47.5
Ⓒ	77	7.7	55.5

LENGTH	
Bolt Ⓓ	90 mm (3.5 in)
Bolt Ⓔ	90 mm (3.5 in)...E-02, 19, 54
	100 mm (3.9 in)...E-03, 28, 33
Bolt Ⓕ	115 mm (4.5 in)
Bolt Ⓖ	50 mm (2.0 in)
Bolt Ⓗ	50 mm (2.0 in)
Bolt Ⓘ	245 mm (9.6 in)

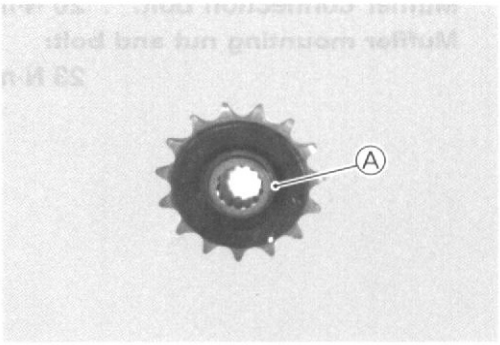
- Tighten the brake pedal bolt to the specified torque.

Brake pedal bolt: 29 N·m (2.9 kgf-m, 21.0 lb-ft)

NOTE:
After installing the brake pedal, install the new cotter pins into the brake pedal bolt and pin.



- Install the engine sprocket, with side Ⓐ of the sprocket facing toward the engine.



- Tighten the engine sprocket nut to the specified torque.

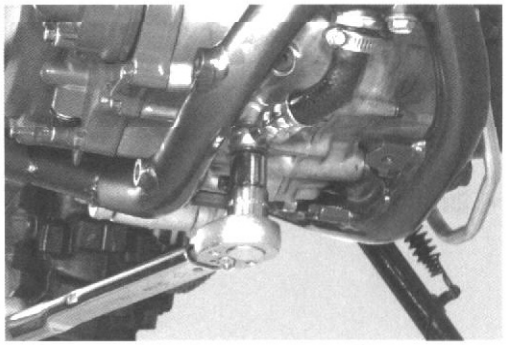
Engine sprocket nut: 110 N·m (11.0 kgf-m, 79.5 lb-ft)

NOTE:
When tightening the engine sprocket nut, depress the brake pedal.

- Bend the washer securely.

- Tighten the engine oil hose union bolt to the specified torque.

Engine oil hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

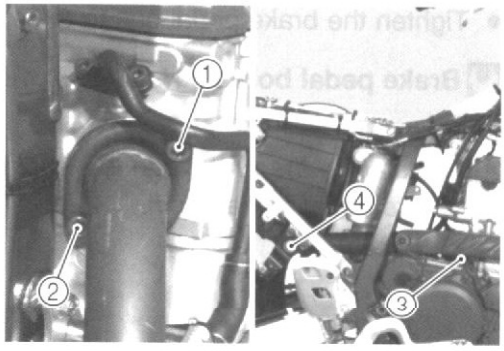


- Tighten the exhaust pipe nut ①, exhaust pipe bolt ②, muffler connection bolt ③, muffler mounting bolt ④, and muffler mounting nut ⑤ to the specified torque.

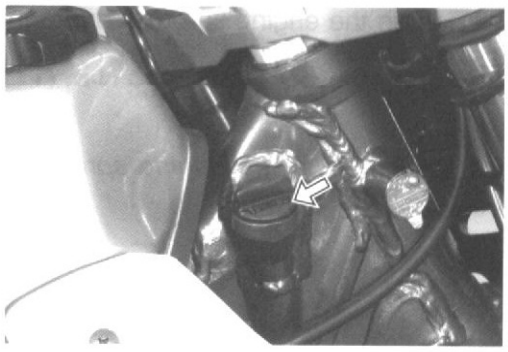
Be sure to tighten the nuts and bolts in the following order.

- Exhaust pipe nut and exhaust pipe bolt (①, ②)
- Muffler mounting nut ⑤
- Muffler mounting bolt ④
- Muffler connection bolt ③

Exhaust pipe nut and bolt : 23 N·m (2.3 kgf-m, 16.5 lb-ft)
Muffler connection bolt: 20 N·m (2.0 kgf-m, 14.5 lb-ft)
Muffler mounting nut and bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)



- Pour 1.9 L (2.0 US qt, 1.7 Imp qt) of an API service classified SF or SG engine oil that has a viscosity rating of SAE 10W-40, into the oil filler hole, located in the frame, after overhauling it.
- Start the engine and allow it to run for about three minutes at idle speed.
- Turn off the engine and wait about three minutes, and then check the oil level on the dipstick.



DATA Engine oil capacity

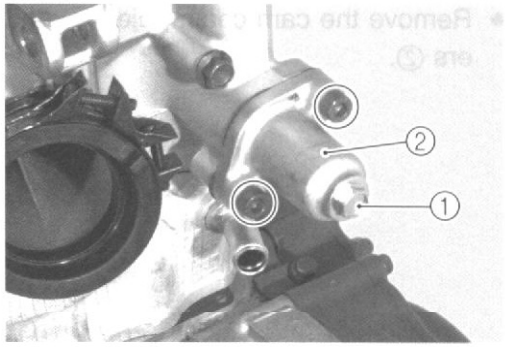
Oil change:	**1.7 L (1.8 US qt, 1.5 Imp qt)**
Oil and filter change:	**1.8 L (1.9 US qt, 1.6 Imp qt)**
Engine overhaul:	**1.9 L (2.0 US qt, 1.7 Imp qt)**

- Adjust the following items to specification.

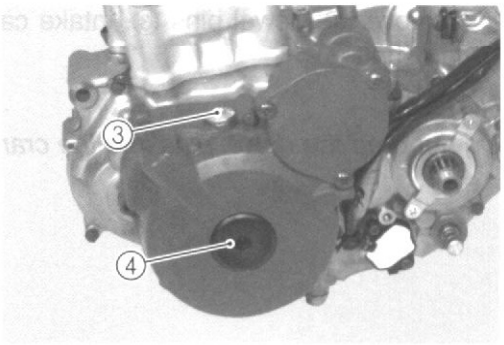
* **Throttle cable play** ..... ☞ 2-13
* **Engine idle speed** ..... ☞ 2-14
* **Brake pedal** ..... ☞ 2-18

ENGINE DISASSEMBLY

- Remove the cap bolt ① and cam chain tension adjuster ②.

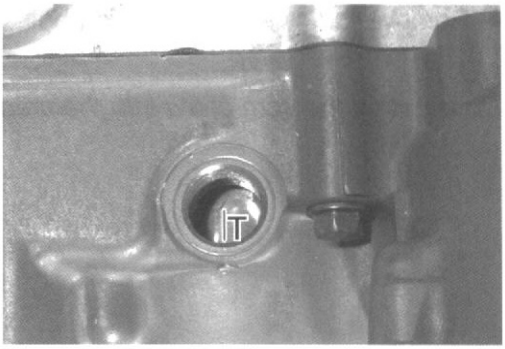


- Remove the top-dead-center (TDC) plug ③ and generator cover cap ④.

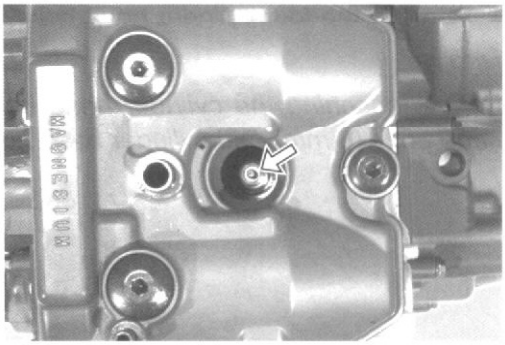


- Turn the generator rotor until the "T" line on the generator rotor is aligned with the center of the hole in the generator cover.

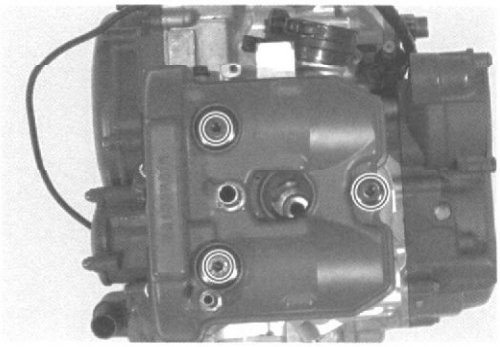
NOTE:
When removing the cylinder head cover, the piston must be at TDC of the compression stroke.



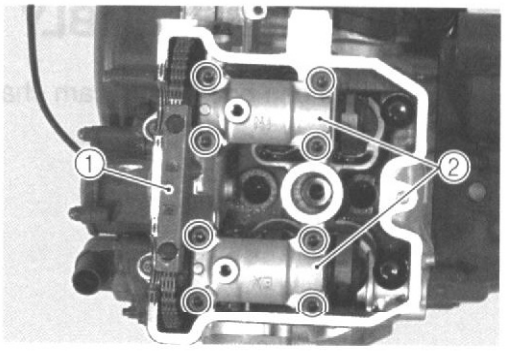
- Remove the spark plug.



- Remove the cylinder head cover bolts in diagonal stages, and then remove the cylinder head cover.

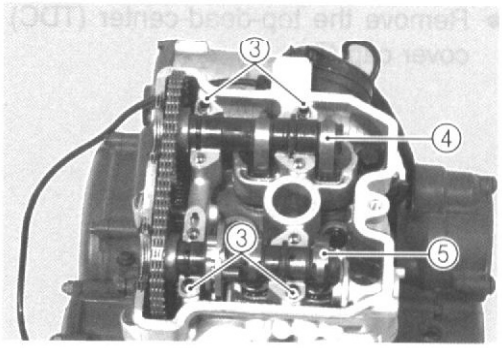


- Remove the cam chain guide ① and camshaft journal holders ②.



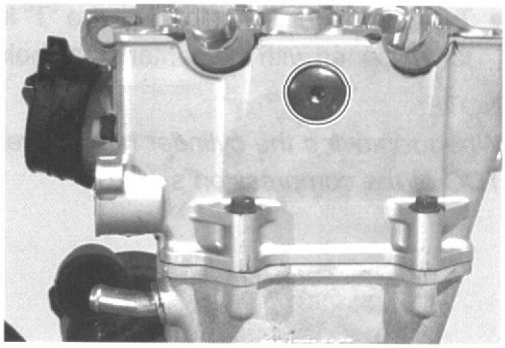
- Remove the dowel pins ③, intake camshaft ④ and exhaust camshaft ⑤.

NOTE:
Do not drop the dowel pins into the crankcase.



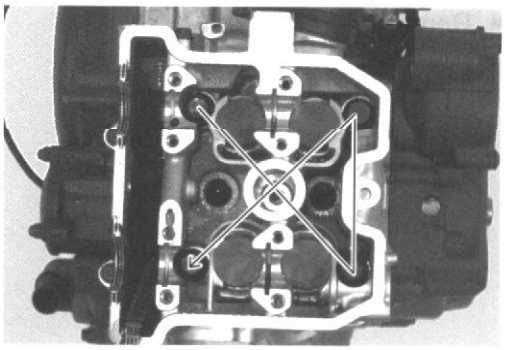
- Remove the cylinder head side bolt.

NOTE:
Do not drop the cam chain into the crankcase.



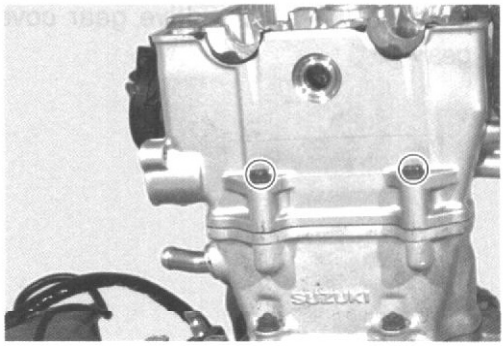
- Remove the four cylinder head bolts in diagonal stages.

NOTE:
Before loosening the cylinder head bolts, loosen the cylinder head bolts (6 mm) and cylinder base nuts.

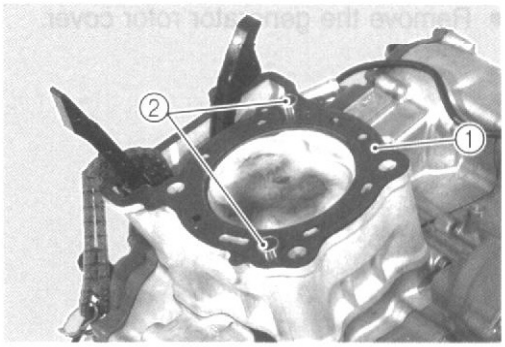


- Remove the cylinder head bolts, and then remove the cylinder head.

NOTE:
If the cylinder head does not come off easily, lightly tap it using a plastic mallet.

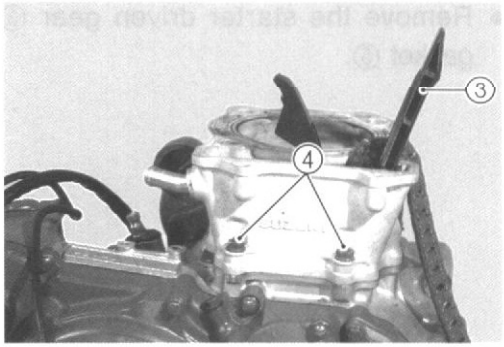


- Remove the cylinder head gasket ① and dowel pins ②.

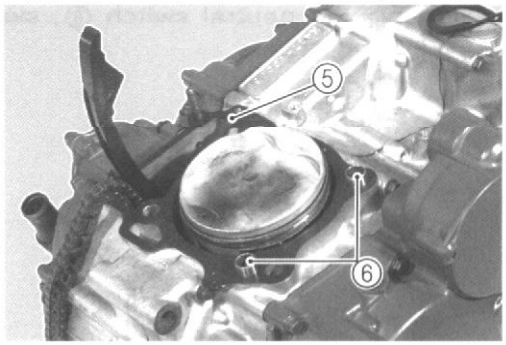


- Remove the cam chain guide ③.
- Remove the cylinder base nuts ④, and then remove the cylinder.

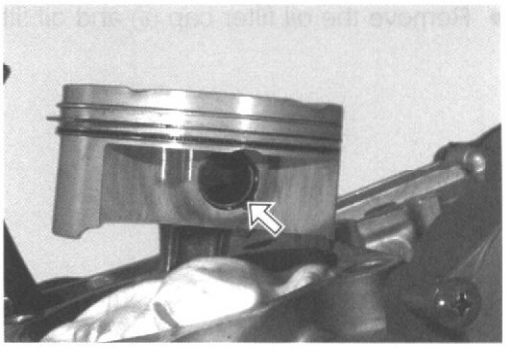
NOTE:
If the cylinder does not come off easily, lightly tap it using a plastic mallet.



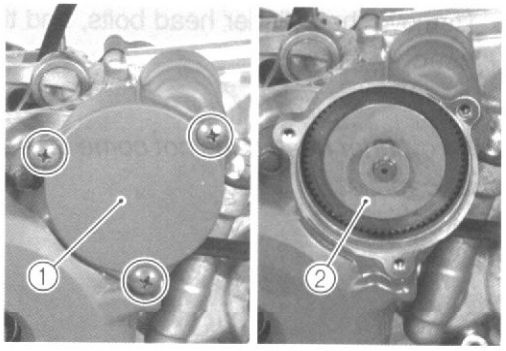
- Remove the cylinder gasket ⑤ and dowel pins ⑥.



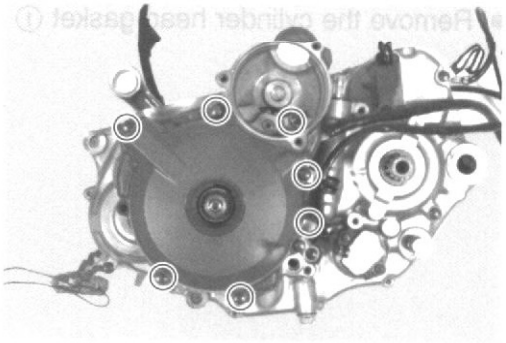
- Place a clean rag over the cylinder base to prevent the piston pin circlip from dropping into the crankcase.
- Remove the piston pin circlip.
- Draw out the piston pin and remove the piston.



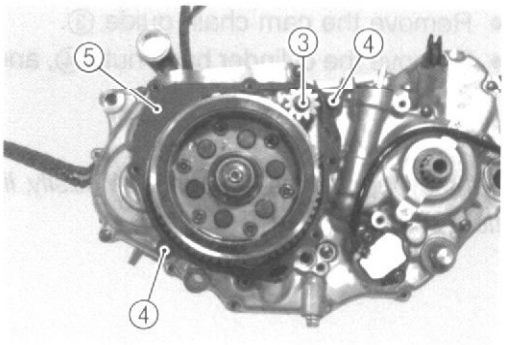
- Remove the starter drive gear cover ① and starter drive gear ②.



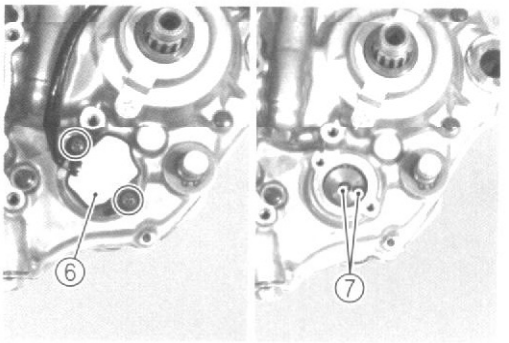
- Remove the generator rotor cover.



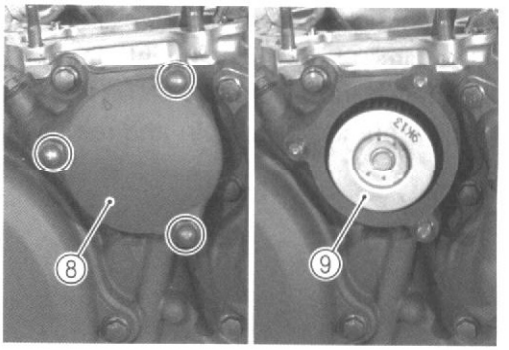
- Remove the starter driven gear ③, dowel pins ④, and gasket ⑤.



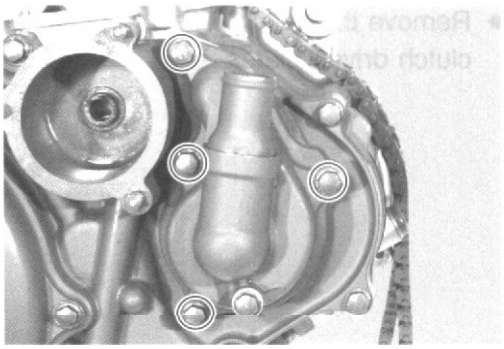
- Remove the neutral switch ⑥, switch contacts ⑦, and springs.



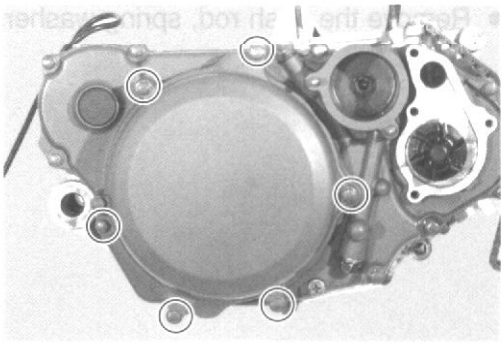
- Remove the oil filter cap ⑧ and oil filter ⑨.



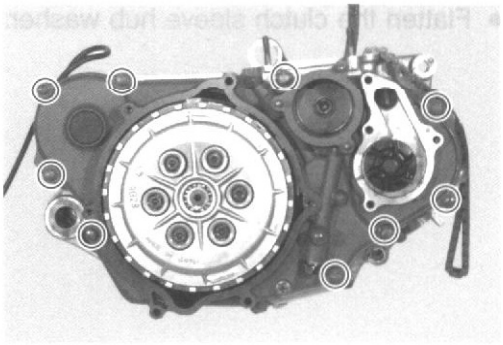
- Remove the water pump cover.



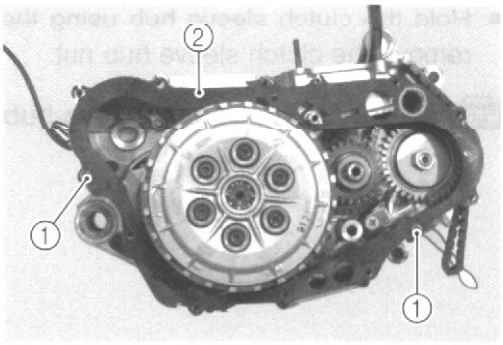
- Remove the clutch cover.



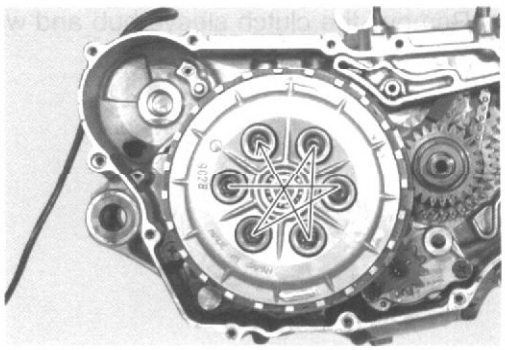
- Remove the right crankcase cover.



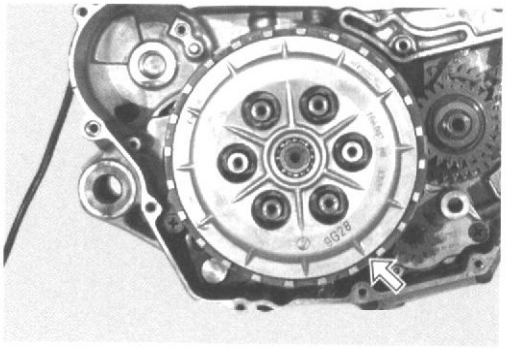
- Remove the dowel pins ① and gasket ②.



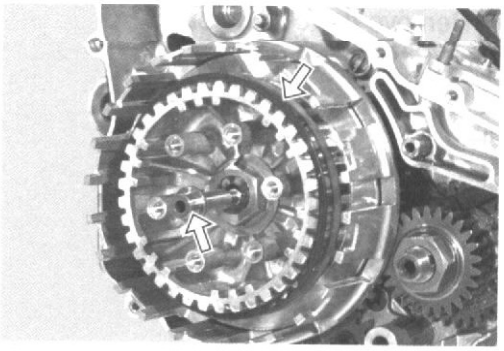
- Loosen the clutch spring set bolts working in diagonal stages, and then remove them when they are fully loosened.



- Remove the clutch pressure plate, clutch drive plates, and clutch driven plates.



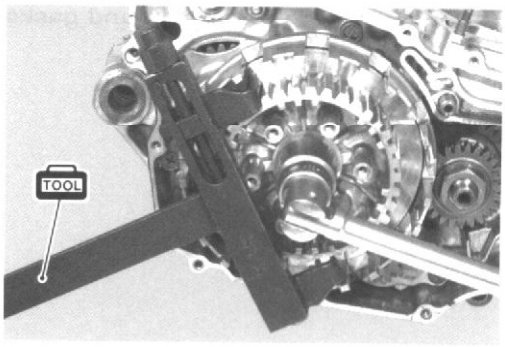
- Remove the push rod, spring washer, and spring washer seat.



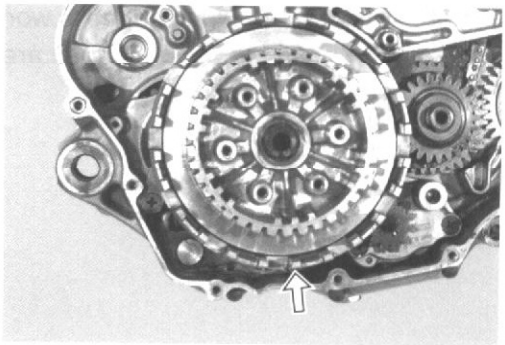
- Flatten the clutch sleeve hub washer.

- Hold the clutch sleeve hub using the special tool, and then remove the clutch sleeve hub nut.

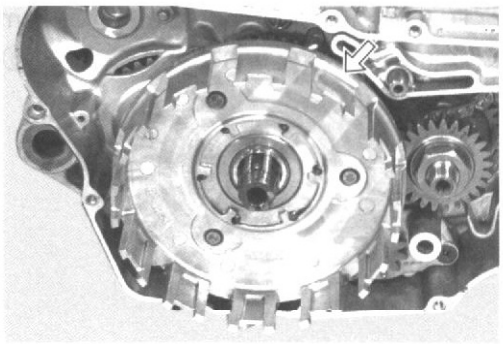
TOOL **09920-53740: Clutch sleeve hub holder**



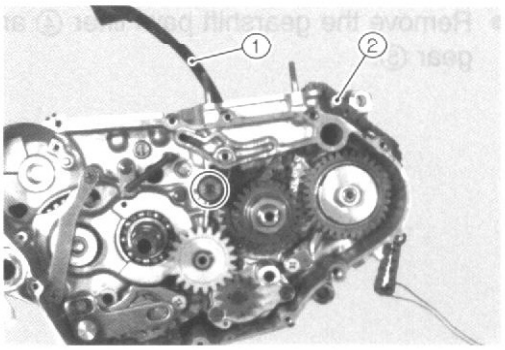
- Remove the clutch sleeve hub and washer.



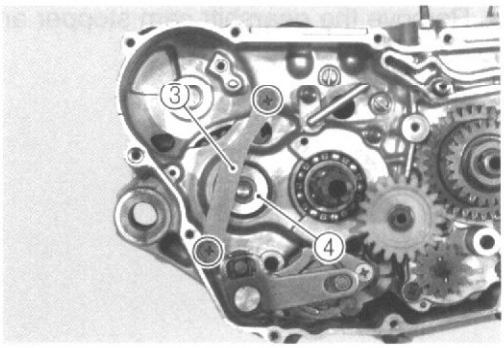
- Remove the primary driven gear assembly and collar.



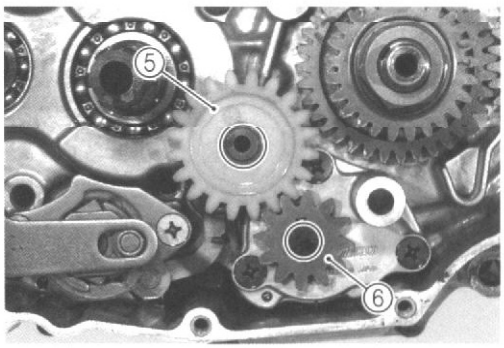
- Remove the cam chain tensioner ① and cam chain ②.



- Remove the retainer ③ and spacer ④.



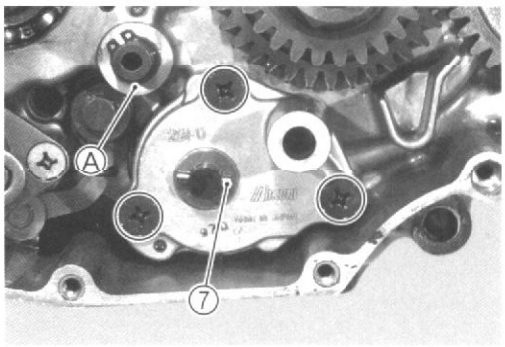
- Remove the oil pump idle gear ⑤ and oil pump driven gear ⑥.



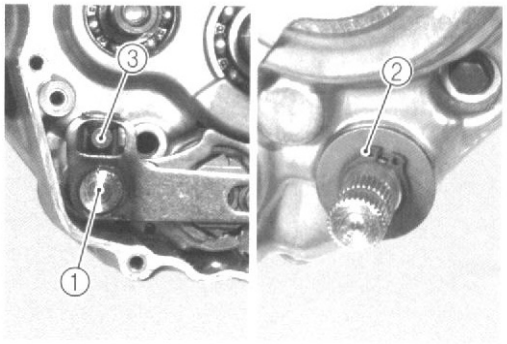
- Remove the pin ⑦ and oil pump assembly.

⚠ CAUTION

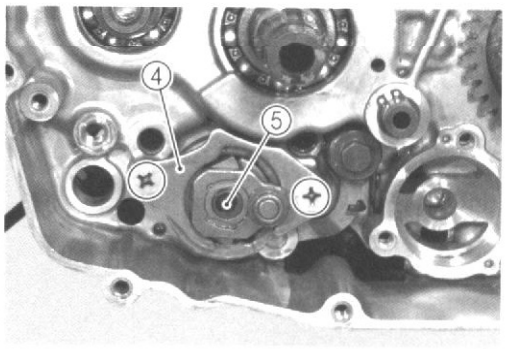
Do not remove the circlip Ⓐ, before separating the crankcase to prevent the oil pump idle gear shaft from dropping into the crankcase.



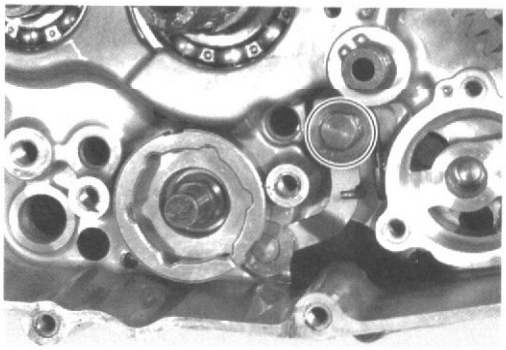
- Remove the gearshift shaft ① by removing the circlip ②.
- Remove the gearshift arm stopper ③.



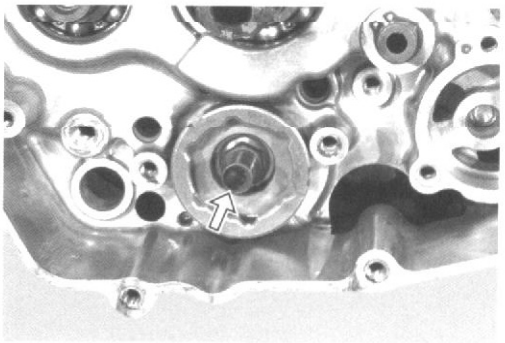
- Remove the gearshift pawl lifter ④ and gearshift cam driven gear ⑤.



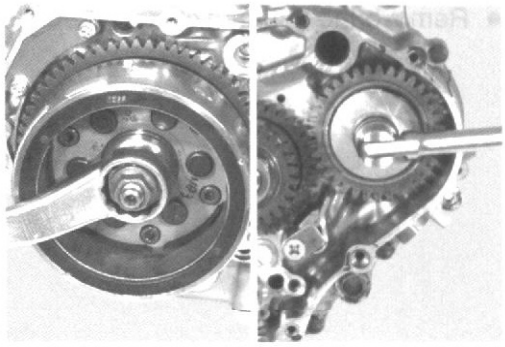
- Remove the gearshift cam stopper arm.



- Remove the gearshift cam driven gear bolt.



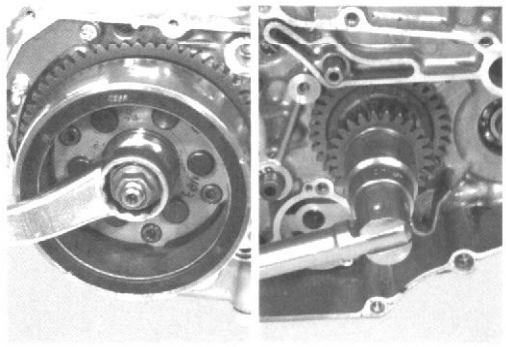
- Hold the generator rotor using a 26 mm offset wrench, and then remove the balancer driven gear nut.
- Remove the plate, balancer driven gear, and key.



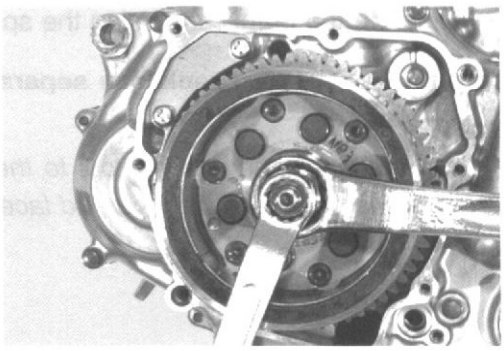
- Hold the generator rotor using a 26 mm offset wrench, and then remove the primary drive gear nut.
- Remove the washer, primary drive gear, pin, key, and balancer drive gear.

⚠ CAUTION

The primary drive gear nut has left-hand threads.



- Hold the generator rotor using a 26 mm offset wrench, and then remove the generator rotor nut.

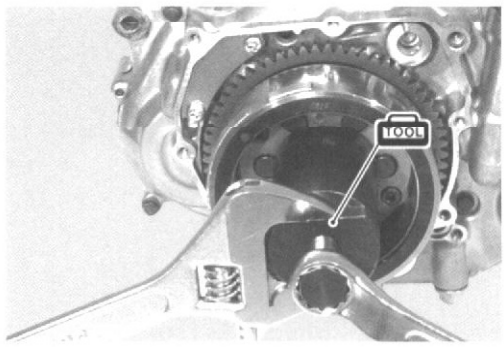


- Remove the generator rotor using the special tool.

TOOL 09930-31921: Rotor remover

NOTE:

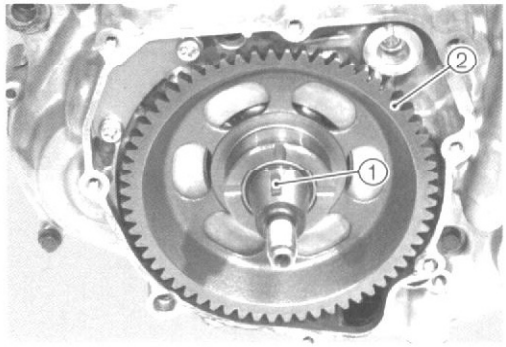
Do not use the rotor remover attachment to remove the generator rotor, since it will not fit on the end of the crankshaft. As an alternative, temporarily install the generator rotor nut to the crankshaft, and then remove the generator rotor using the special tool.



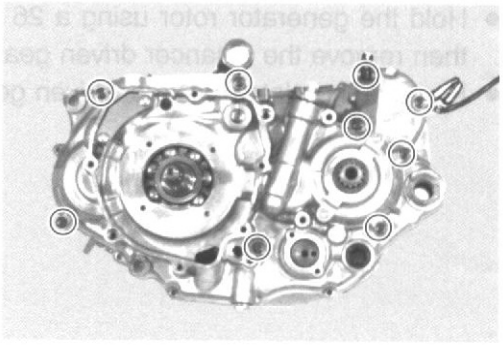
⚠ CAUTION

Do not hit the generator rotor with a hammer, otherwise the rotor may be damaged.

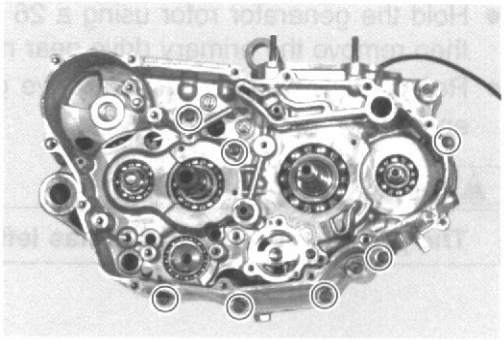
- Remove the key ① and starter clutch gear ②.



- Remove the left crankcase securing bolts.



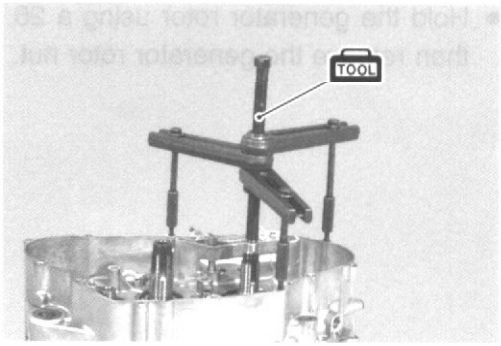
- Remove the right crankcase securing bolts.



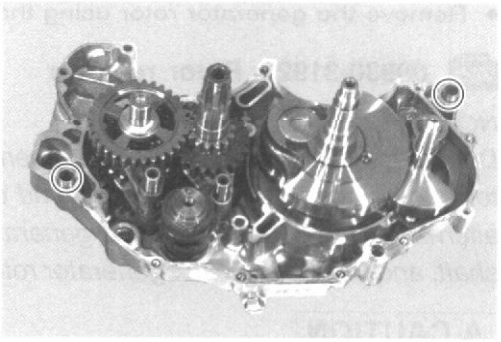
- Separate the crankcase using the special tool.

TOOL 09920-13120: Crankcase separating tool

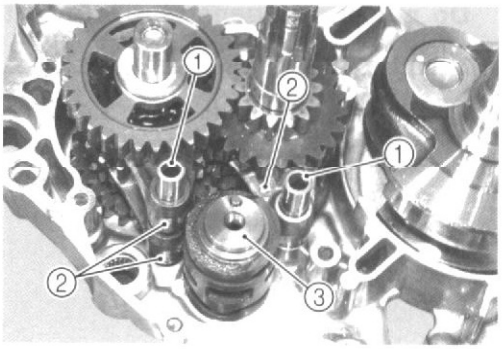
NOTE:
Fit the crankcase separating tool to the right side, so that the tool plate is paralleled with the end face of the crankcase.



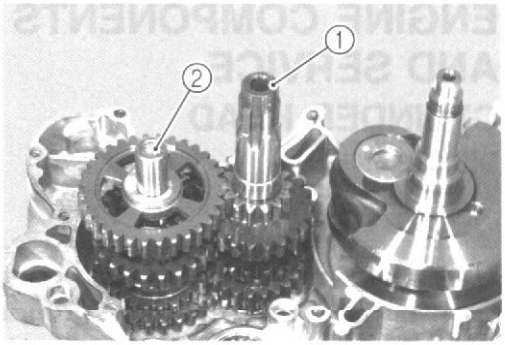
- Remove the dowel pins.



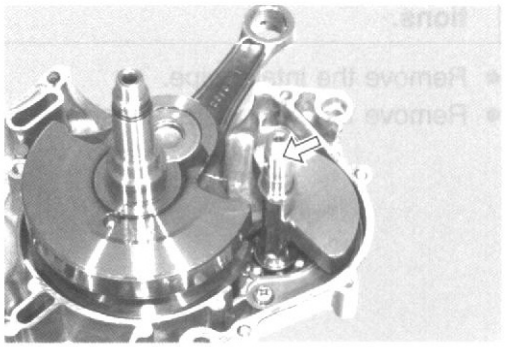
- Remove the gearshift fork shafts ①, gearshift forks ②, and gearshift cam ③.



- Remove the countershaft assembly ① and driveshaft assembly ②.

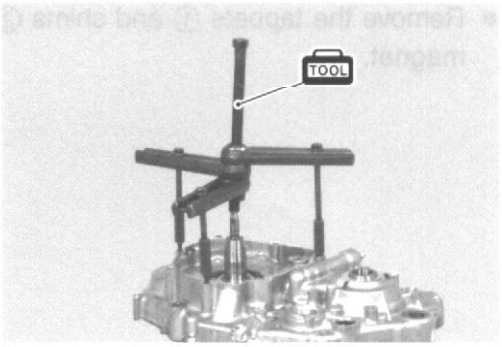


- Remove the balancer shaft.

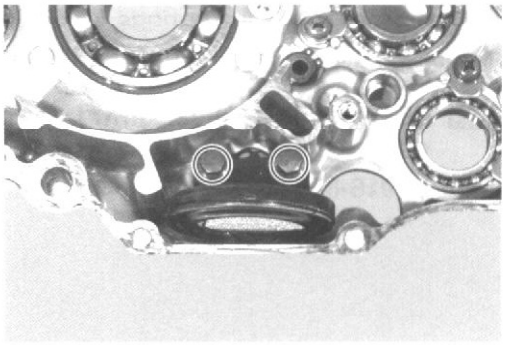


- Remove the crankshaft from the crankcase using the special tool.

TOOL **09920-13120: Crankcase separating tool**



- Remove the oil sump filter.



ENGINE COMPONENTS INSPECTION AND SERVICE

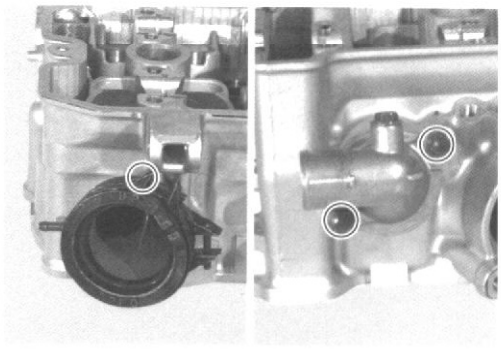
CYLINDER HEAD

DISASSEMBLY

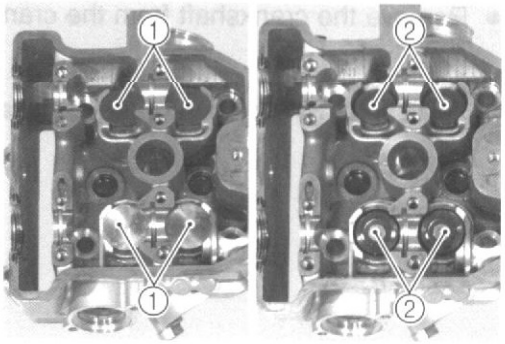
⚠ CAUTION

Identify the position of each removed part. Organize the parts in their respective groups (i.e., exhaust or intake) so that they can be installed in their original positions.

- Remove the intake pipe.
- Remove the thermostat housing and thermostat.

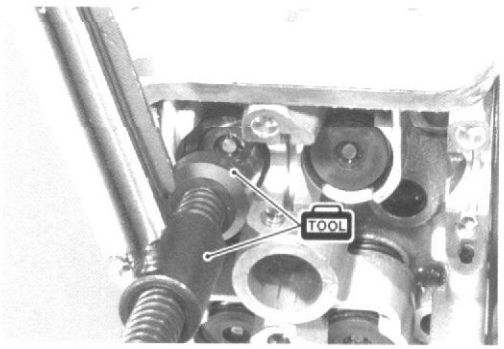


- Remove the tappets ① and shims ② by hand or by using a magnet.

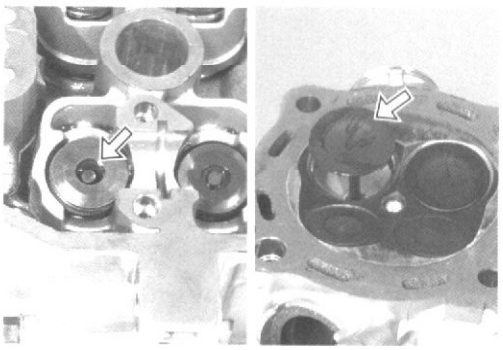


- Compress the valve springs, and then remove the valve cotters from the valve stem using the special tools.

TOOL **09916-14510: Valve spring compressor**
09916-14910: Attachment
09916-84511: Tweezers

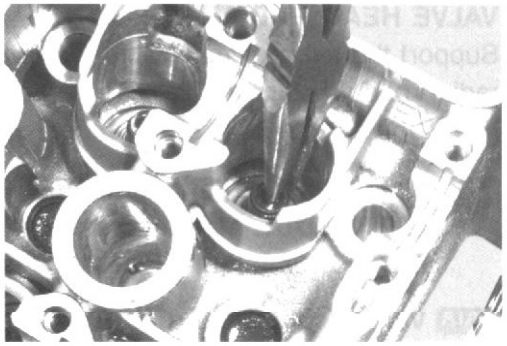


- Remove the valve spring retainer and valve springs.
- Remove the valve from the other side.



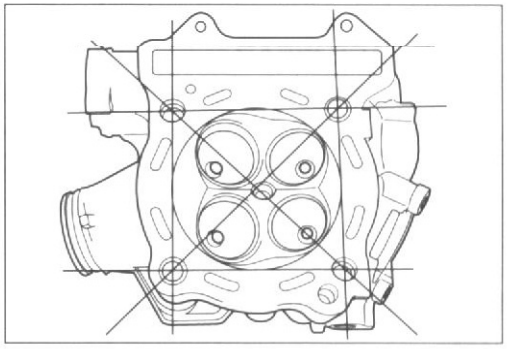
- Remove the oil seal with long-nose pliers.
- Remove the valve spring seat.

NOTE:
Removal of valves completes ordinary disassembling work. If valve guides have to be removed for replacement after inspecting the related parts, carry out the steps shown in the valve guide servicing.



CYLINDER HEAD DISTORTION

Decarbonize the combustion chamber.
Check the gasket surface of the cylinder head for distortion using a straightedge and thickness gauge. Take clearance readings at several places. If any clearance reading exceeds the service limit, replace the cylinder head with a new one.

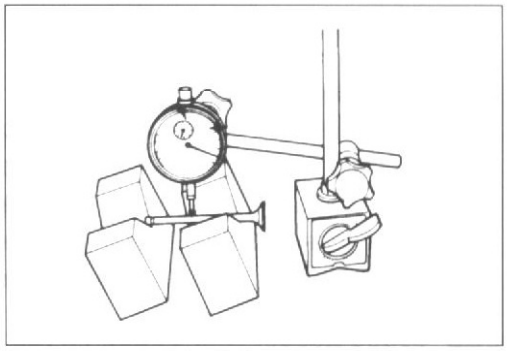


TOOL **09900-20803: Thickness gauge**

DATA **Cylinder head distortion**
Service Limit: 0.05 mm (0.002 in)

VALVE STEM RUNOUT

Support the valve using V-blocks and measure the valve stem runout using the dial gauge, as shown. If the runout exceeds the service limit, replace the valve with a new one.

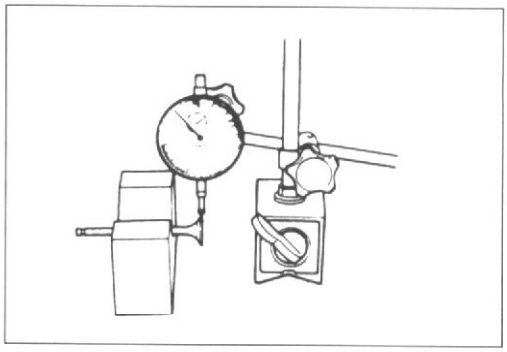


TOOL **09900-20606: Dial gauge (1/100 mm)**
09900-20701: Magnetic stand
09900-21304: V-block set (100 mm)

DATA **Valve stem runout**
Service Limit: 0.05 mm (0.002 in)

VALVE HEAD RADIAL RUNOUT

Support the valve using a V-block and measure the valve head radial runout using the dial gauge, as shown. If the runout exceeds the service limit, replace the valve with a new one.

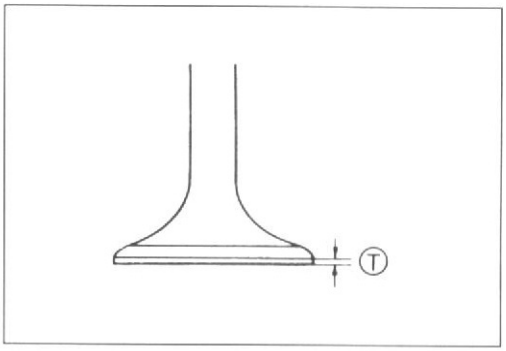


TOOL **09900-20606: Dial gauge (1/100 mm)**
09900-20701: Magnetic stand
09900-21304: V-block set (100 mm)

DATA **Valve head radial runout**
Service Limit: 0.03 mm (0.001 in)

VALVE FACE WEAR

Visually inspect each valve face for wear or damage. If any abnormal wear is found, replace the respective valve with a new one. Measure the valve face thickness Ⓣ. If the valve face thickness is not within the specified value, replace the valve with a new one.

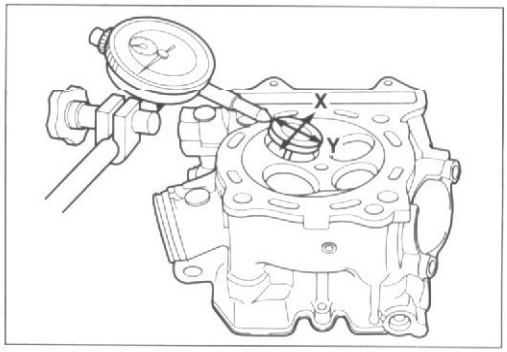


TOOL **09900-20101: Vernier calipers**

DATA **Valve face thickness Ⓣ**
Service Limit: 0.5 mm (0.02 in)

VALVE STEM DEFLECTION

Lift the valve about 10 mm (0.39 in) from the valve seat. Measure the valve stem deflection in two directions, "X" and "Y", perpendicular to each other. Position the dial gauge as shown. If the deflection exceeds the service limit, determine whether the valve or the guide should be replaced with a new one.

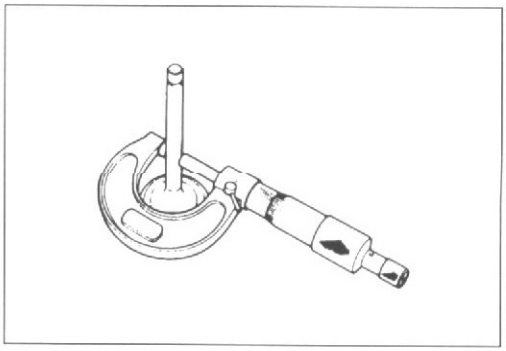


TOOL **09900-20606: Dial gauge (1/100 mm)**
09900-20701: Magnetic stand

DATA **Valve stem deflection**
Service Limit: 0.35 mm (0.014 in)

VALVE STEM WEAR

Measure the valve stem outside diameter using the micrometer. If the outside diameter is not within the specified value, replace the valve with a new one. If the valve stem outside diameter is within specification, but the valve stem deflection is not, replace the valve guide with a new one. After replacing the valve or valve guide, check the deflection.

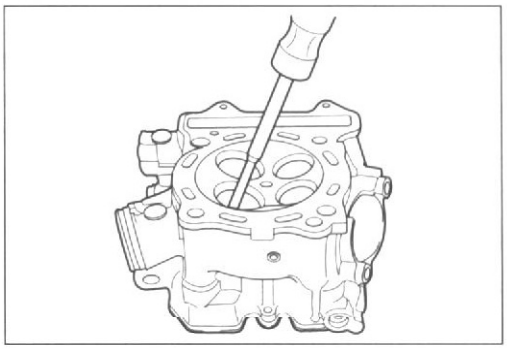


TOOL **09900-20205: Micrometer (0 – 25 mm)**

DATA **Valve stem O.D.**
Standard:
IN: 4.975 – 4.990 mm (0.1959 – 0.1965 in)
EX: 4.955 – 4.970 mm (0.1951 – 0.1957 in)

VALVE GUIDE SERVICING

- Drive the valve guide out toward the camshaft side using the valve guide remover.

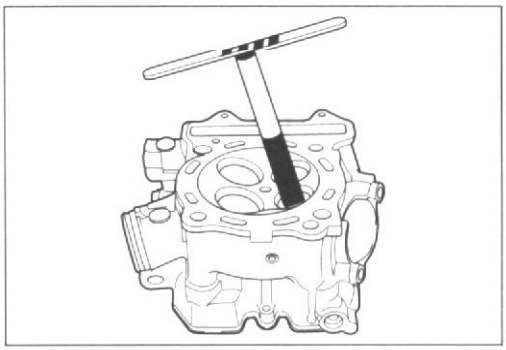


09916-44310: Valve guide remover/installer

NOTE:

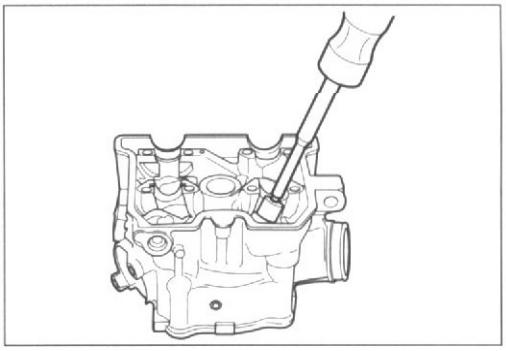
* *Discard the removed valve guide.*
* *Only oversized valve guides are available as replacement parts.*

- Refinish the valve guide holes in the cylinder head using the valve guide reamer and handle.



09916-34580: Valve guide reamer (10.8 mm)
09916-34542: Reamer handle

- Oil the stem hole of each valve guide and drive the guide into the guide hole using the valve guide installer and attachment.

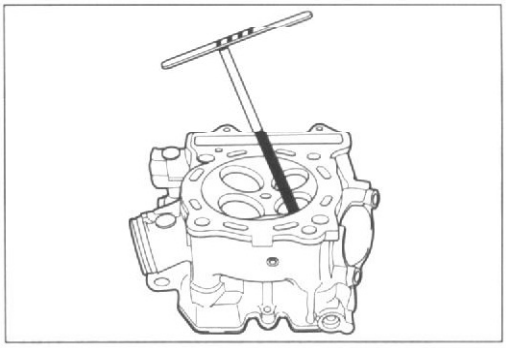


09916-44310: Valve guide remover/installer
09916-53360: Valve guide installer attachment

⚠ CAUTION

Failure to oil the valve guide hole before driving the new guide into place may result in a damaged guide or head.

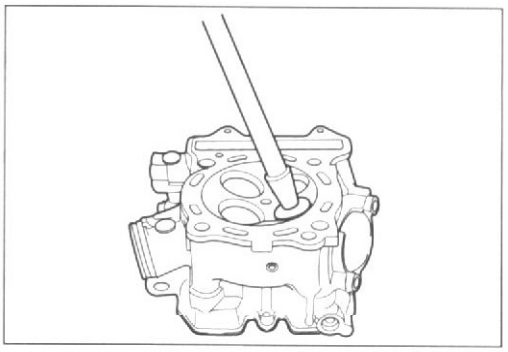
- After fitting the valve guides, refinish their guiding bores with the valve guide reamer. Be sure to clean and oil the guides after reaming.



09916-34570: Valve guide reamer (5.0 mm)
09916-34542: Reamer handle

VALVE SEAT WIDTH

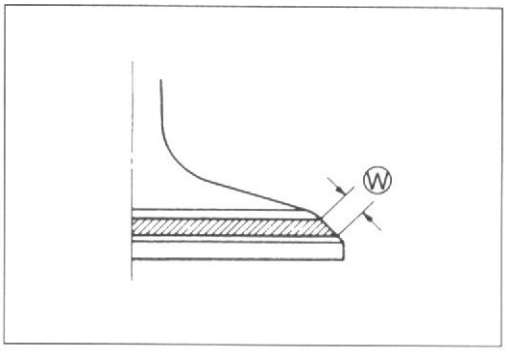
- Coat the valve seat uniformly with prussian blue. Install the valve and attach a valve lapper onto it. Tap the coated seat with the valve face in a rotating manner, in order to obtain a clear impression of the seating contact.



TOOL 09916-10911: Valve lapper set

- The ring-like dye impression left on the valve face must be continuous, without any breaks. In addition, the width of the dye ring, which is the valve seat width, must be within the following specification.

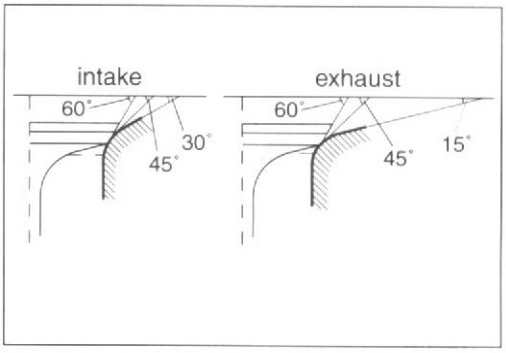
DATA Valve seat width Ⓦ
Standard: 0.9 – 1.1 mm (0.035 – 0.043 in)



If the valve seat is out of specification, re-cut the seat.

VALVE SEAT SERVICING

The valve seats for both the intake and exhaust valves are machined to three different angles. The seat contact surface is cut at 45°.



	Intake	Exhaust
45°	N-128	N-128
15°	—	N-121
30°	N-128	—
60°	N-114	N-114

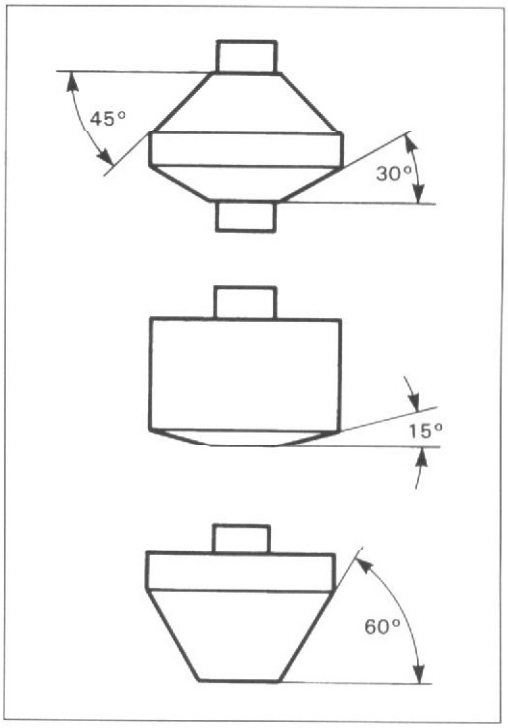
For USA

TOOL Valve seat cutter: N-114, N-121, and N-128
Solid pilot: N-100-5.0

For the other countries

TOOL 09916-21110: Valve seat cutter set
09916-22420: Cutter N-128
09916-22430: Cutter N-114
09916-20610: Cutter N-121
09916-24311: Solid pilot N-100-5.0

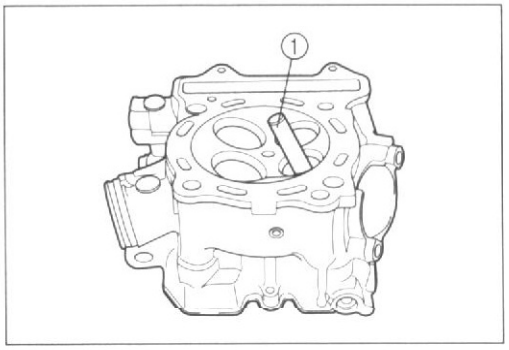
NOTE:
Use the solid pilot N-100-5.0 along with the valve seat cutters N-114, N-121, and N-128.



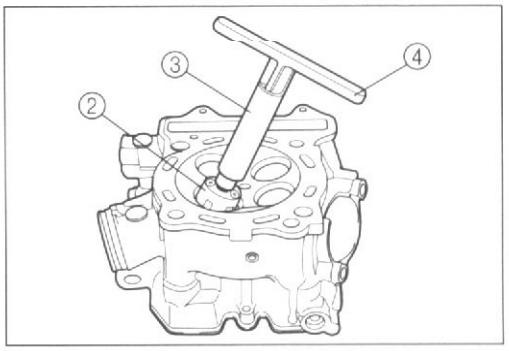
⚠ CAUTION

The valve seat contact area must be inspected after each cut.

- When installing the solid pilot ①, rotate it slightly.

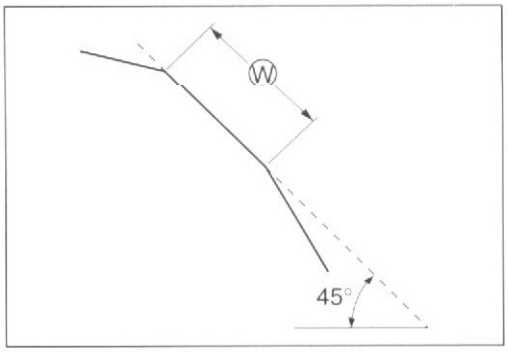


- Seat the pilot snugly. Install the 45° cutter ②, attachment ③, and T-handle ④.



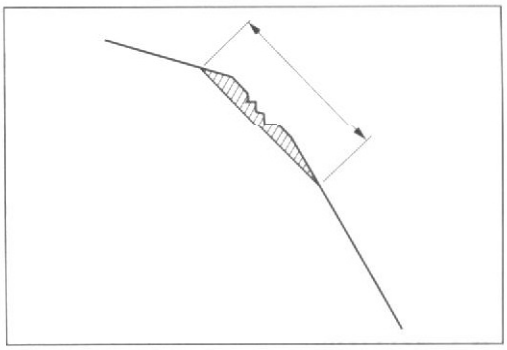
INITIAL SEAT CUT

- Descale and clean up the seat using the 45° cutter. Rotate the cutter one or two turns.
- Measure the valve seat width Ⓦ after every cut.



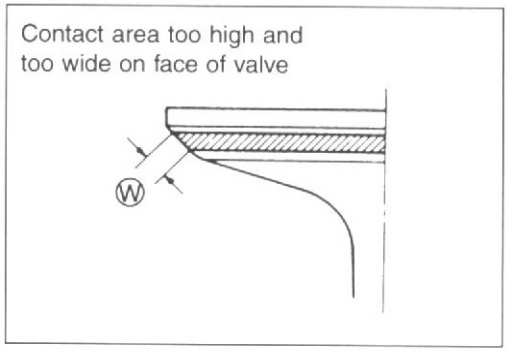
- If the valve seat is pitted or burned, use the 45° cutter to condition the seat some more.

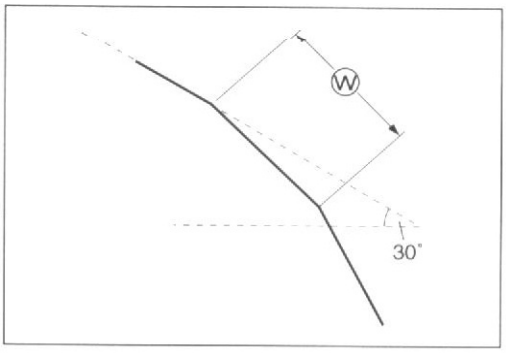
NOTE:
Cut only the minimum amount necessary from the seat to prevent the possibility of the tappet shim replacement.

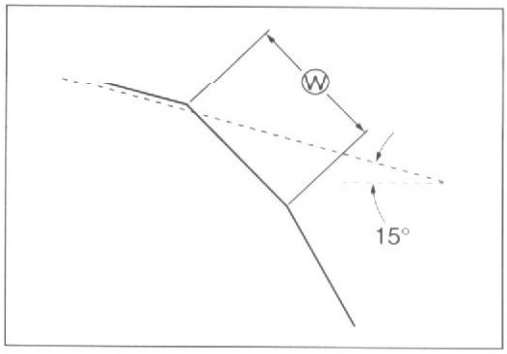


TOP NARROWING CUT

- If the contact area is too high on the valve, or if it is too wide, use the 30° cutter (for the intake side) and the 15° cutter (for the exhaust side) to lower and narrow the contact area.

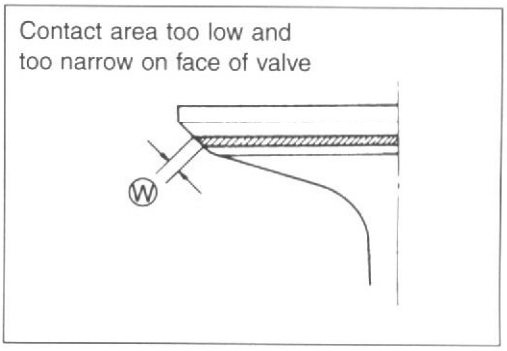






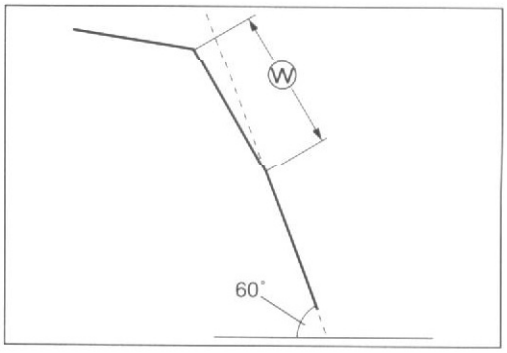
FINAL SEAT CUT

- If the contact area is too low or too narrow, use the 60° cutter to raise and widen the contact area. If the contact area is too high or too wide, use the 15° cutter to lower and narrow it to the correct width.
- After the desired seat position and width is achieved, use the 60° cutter very lightly to clean up any burrs caused by the previous cutting operations.



⚠ CAUTION

DO NOT use a lapping compound after the final cut is made. The finished valve seat should have a velvety smooth finish but not a highly polished or shiny one. This will provide a soft surface for the final seating of the valve which will occur during the first few seconds of engine operation.

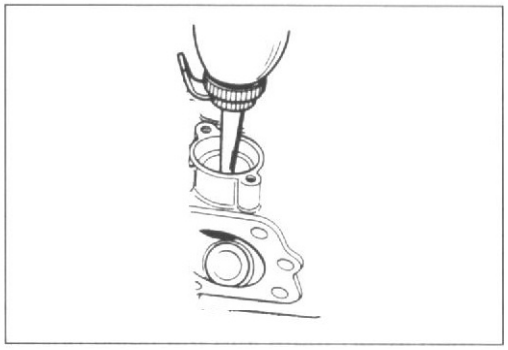


NOTE:

After servicing the valve seats, be sure to check the tappet clearance after the cylinder head has been installed. (☞ 2-5 to 2-8)

VALVE SEAT SEALING CONDITION INSPECTION

With the valve and valve spring assembled, pour a small quantity of gasoline into the intake or exhaust port.
Check that no gasoline leaks through the valve seat. If leakage is found, correct the sealing surface.

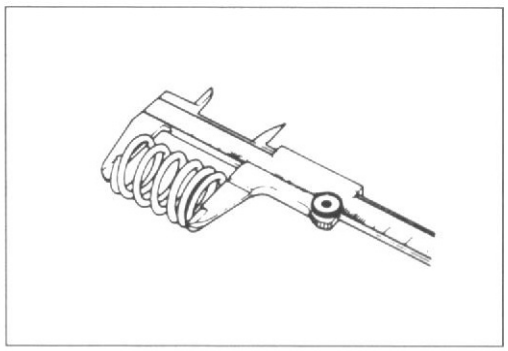


⚠ WARNING

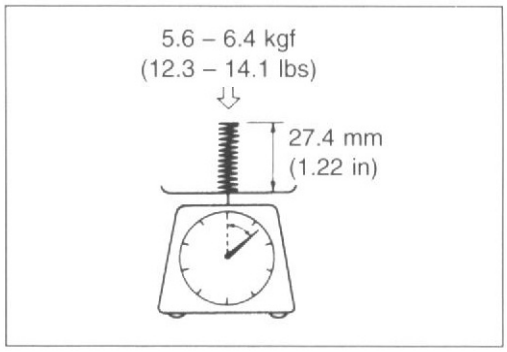
Gasoline is highly flammable and explosive.
Keep heat, sparks, and flames away from gasoline.

VALVE SPRING

The force of the coil spring keeps the valve seat tight. A weakened spring results in reduced engine power output and accounts for the chattering noise coming from the valve mechanism.
Check the valve springs for proper strength by measuring their free length and also by the force required to compress them. If the spring length is less than the service limit or if the force required to compress the valve spring is not within specification, replace both the inner and outer springs as a set.



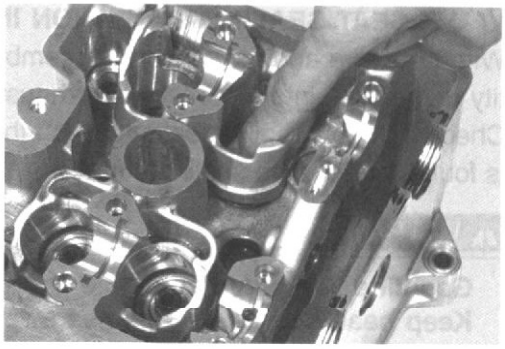
DATA Valve spring free length (IN & EX)
Service Limit:
INNER: 32.6 mm (1.28 in)
OUTER: 36.3 mm (1.43 in)



DATA Valve spring tension (IN & EX)
Standard:
INNER: 56 – 64 N (5.6 – 6.4 kgf) /27.4 mm
(12.3 – 14.1 lbs/1.08 in)
OUTER: 126 – 145 N (12.6 – 14.5 kgf) /30.9 mm
(27.7 – 32.0 lbs/1.22 in)

REASSEMBLY

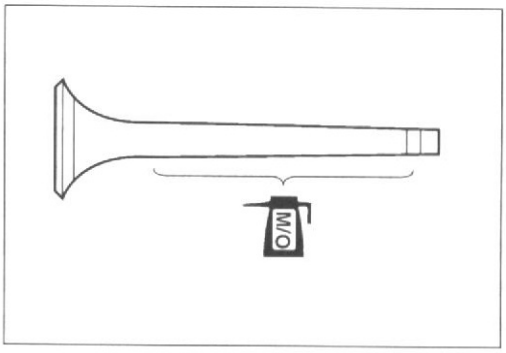
- Install each valve spring seat.
- Apply molybdenum oil solution to each oil seal and press-fit them into position.



⚠ CAUTION

Do not reuse the oil seals.

- Apply molybdenum oil solution to the valve as shown, and then insert them into the valve guides.

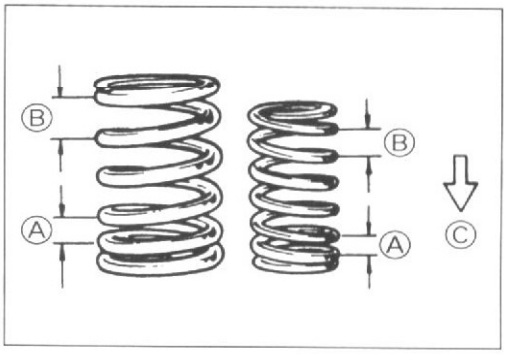


⚠ CAUTION

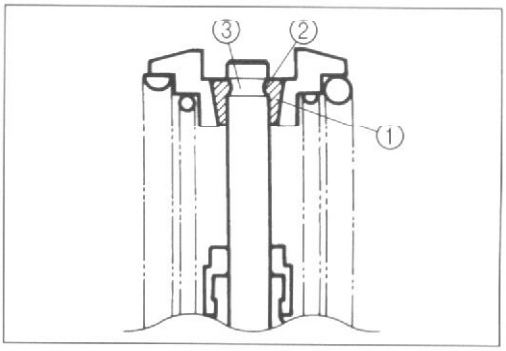
When inserting each valve into the valve guides, make sure not to damage the lip of the oil seal.

- Install the valve spring with the smaller pitch Ⓐ facing the cylinder head.

Ⓑ Larger pitch
Ⓒ Down



- Install the valve spring retainer by pressing down the spring using the valve lifter. Fit the cotter halves to the stem end and release the lifter to allow the cotter ① to wedge between the retainer and the valve stem. Make sure that the rounded lip ② of the cotter fits snugly into the groove ③ in the stem end.

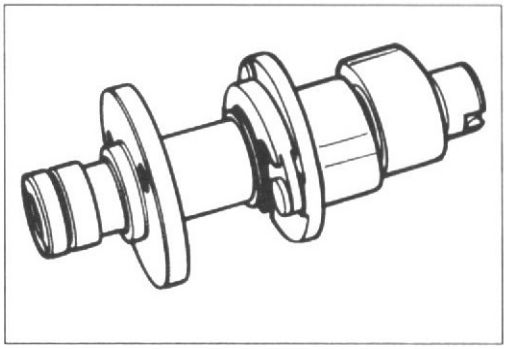


TOOL **09916-14510: Valve spring compressor**
09916-14910: Attachment
09916-84511: Tweezers

⚠ CAUTION

Be sure to install all of the parts in their original positions.

CAMSHAFT/AUTOMATIC DECOMPRESSION ASSEMBLY

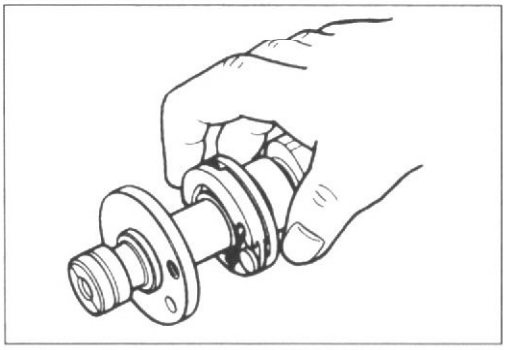


⚠ CAUTION

Do not attempt to disassemble the camshaft/automatic decompression assembly. It is not serviceable.

AUTOMATIC DECOMPRESSION

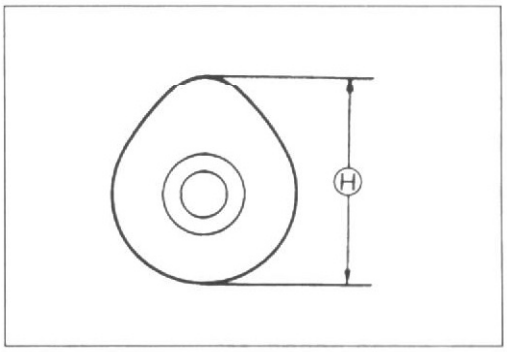
Move the automatic decompression weight by hand to inspect if it is operating smoothly. If the automatic decompression weight does not operate smoothly, replace it with a new one.



CAM WEAR

Worn-down cams are often the cause of mistimed valve operation resulting in reduced power output.

Measure the cam height Ⓗ using the micrometer. If the cams are worn to the service limit, replace the camshaft with new a one.



TOOL **09900-20202: Micrometer (25 – 50 mm)**

DATA **Cam height Ⓗ**
Service Limit:
IN: 36.190 mm (1.4240 in)
EX: 35.490 mm (1.3972 in)

CAMSHAFT JOURNAL WEAR

Measure the oil clearance, with the camshaft installed, using the plastigauge.

TOOL **09900-22301: Plastigauge**
09900-22302: Plastigauge

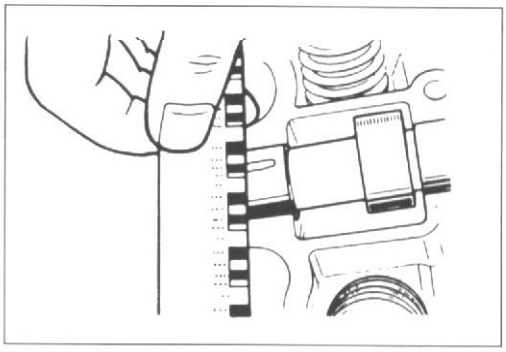
DATA **Camshaft journal oil clearance (IN & EX)**
Service Limit: 0.150 mm (0.0059 in)

Tighten the camshaft journal holder bolts evenly and in diagonal stages to the specified torque.

Camshaft journal holder bolt:
10 N·m (1.0 kgf-m, 7.0 lb-ft)

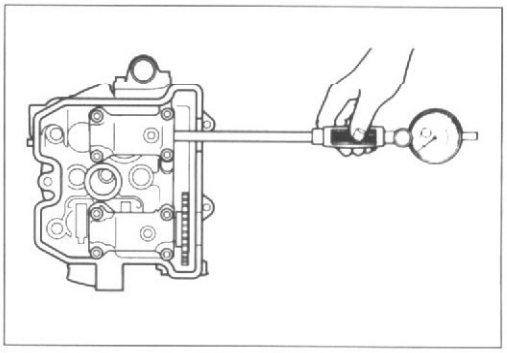
NOTE:
Do not rotate the camshaft with the plastigauge in place.

Remove the journal holders and read the width of the compressed plastigauge with the envelope scale. This measurement should be taken at the widest part of the compressed plastigauge.
If the camshaft journal oil clearance exceeds the service limit, measure the inside diameter of the camshaft journal holder and outside diameter of the camshaft journal. Replace the camshaft or the cylinder head and camshaft holder depending upon which one exceeds the specification.



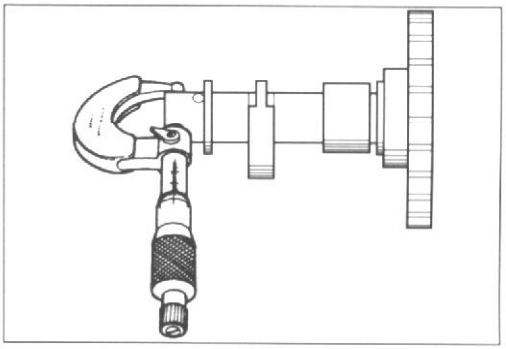
TOOL **09900-22403: Small bore gauge**

DATA **Camshaft journal holder I.D. (IN & EX)**
Standard: 22.012 – 22.025 mm (0.8666 – 0.8671 in)



TOOL **09900-20205: Micrometer (0 – 25 mm)**

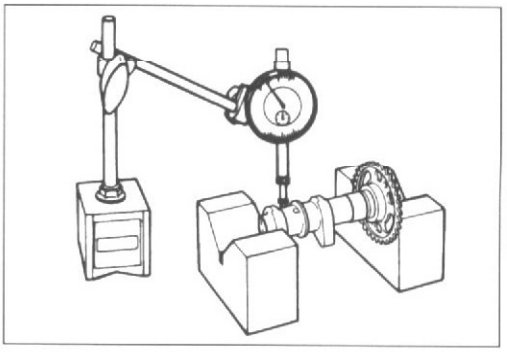
DATA **Camshaft journal O.D. (IN & EX)**
Standard: 21.972 – 21.993 mm (0.8653 – 0.8659 in)



CAMSHAFT RUNOUT

Support the valve using V-blocks and measure the camshaft runout using the dial gauge. If the runout exceeds the service limit, replace the camshaft with a new one.

TOOL **09900-20606: Dial gauge (1/100 mm)**
09900-20701: Magnetic stand
09900-21304: V-block set (100 mm)



DATA **Camshaft runout**
Service Limit: 0.10 mm (0.004 in)

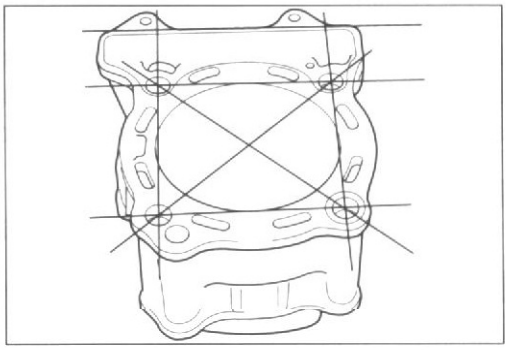
CYLINDER

CYLINDER DISTORTION

Check the gasket surface of the cylinder block for distortion using a straightedge and thickness gauge. Take clearance readings at several places. If any clearance reading exceeds the service limit, replace the cylinder block with a new one.

TOOL 09900-20803: Thickness gauge

DATA Cylinder distortion
Service Limit: 0.05 mm (0.002 in)

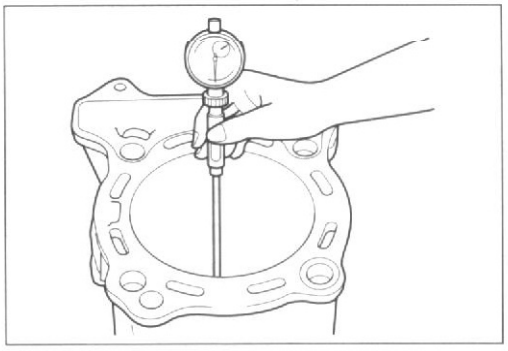


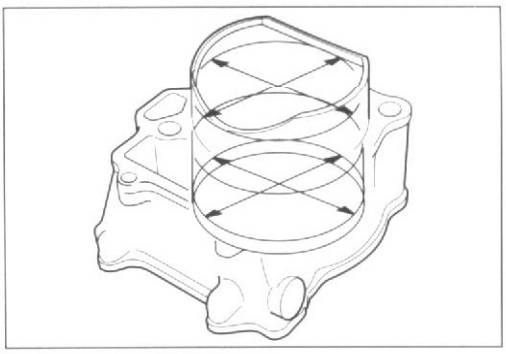
CYLINDER BORE

Inspect the cylinder wall for any scratches, nicks or other damage. Measure the cylinder bore diameter at six places.

TOOL 09900-20508: Cylinder gauge set

DATA Cylinder bore
Standard: 90.000 – 90.015 mm (3.5433 – 3.5439 in)





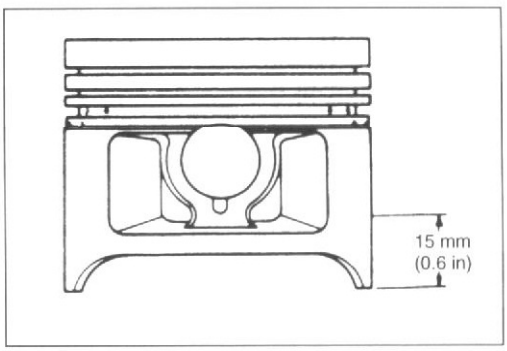
PISTON AND PISTON RING

PISTON DIAMETER

Measure the piston diameter using the micrometer at 15 mm (0.6 in) from the skirt end.
If the piston diameter is less than the service limit, replace the piston with a new one.

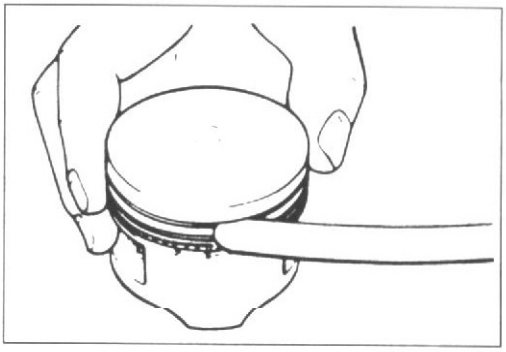
TOOL 09900-20204: Micrometer (75 – 100 mm)

DATA Piston diameter
Service Limit: 89.880 mm (3.5386 in)



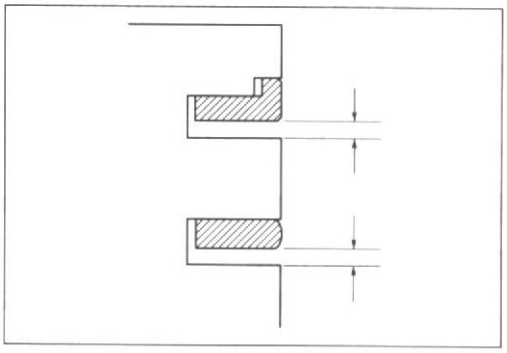
PISTON-RING-TO-GROOVE CLEARANCE

Measure the side clearances of the 1st and 2nd piston rings using the thickness gauge. If any clearance reading exceeds the service limit, replace both the piston and piston rings.



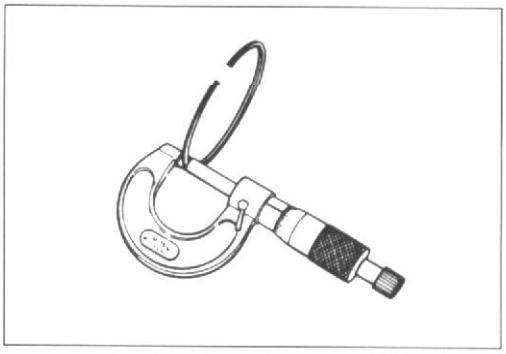
TOOL 09900-20803: Thickness gauge
09900-20205: Micrometer (0 – 25 mm)

DATA Piston-ring-to-groove clearance
Service Limit:
1st: 0.18 mm (0.0071 in)
2nd: 0.15 mm (0.0059 in)



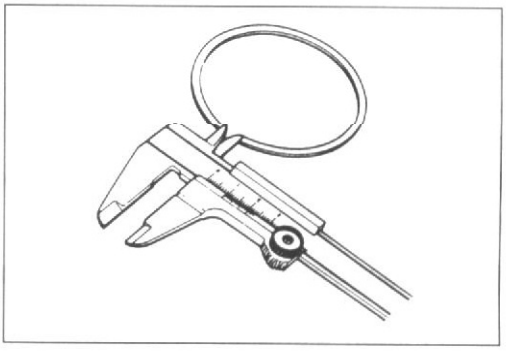
DATA Piston ring groove width
Standard:
1st: 0.78 – 0.80 mm (0.0307 – 0.0315 in)
1.30 – 1.32 mm (0.0512 – 0.0520 in)
2nd: 0.81 – 0.83 mm (0.0319 – 0.0327 in)
Oil: 2.01 – 2.03 mm (0.0791 – 0.0799 in)

DATA Piston ring thickness
Standard:
1st: 0.71 – 0.76 mm (0.0280 – 0.0299 in)
1.08 – 1.10 mm (0.0425 – 0.0433 in)
2nd: 0.77 – 0.79 mm (0.0303 – 0.0311 in)



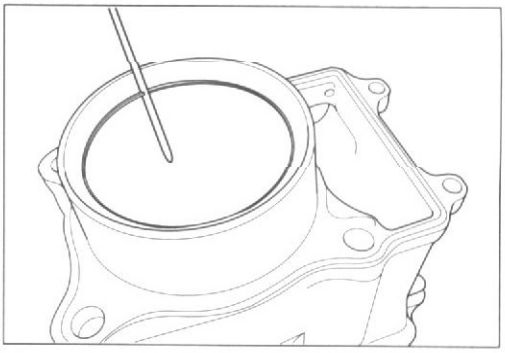
PISTON RING FREE END GAP AND PISTON RING END GAP

Measure the piston ring free end gap using the vernier calipers, first, and then fit the piston ring squarely into the cylinder and measure the piston ring end gap using the thickness gauge. If any measurement exceeds the service limit, replace the piston ring with a new one.



TOOL 09900-20101: Vernier calipers

DATA Piston ring free end gap
Service Limit:
1st: 5.5 mm (0.22 in)
2nd: 9.2 mm (0.36 in)

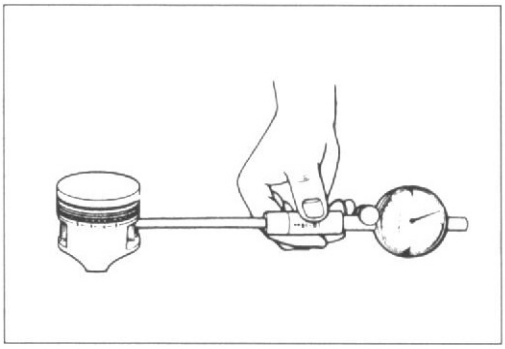


TOOL 09900-20803: Thickness gauge

DATA Piston ring end gap
Service Limit:
1st: 0.50 mm (0.020 in)
2nd: 0.50 mm (0.020 in)

PISTON PIN AND PIN BORE

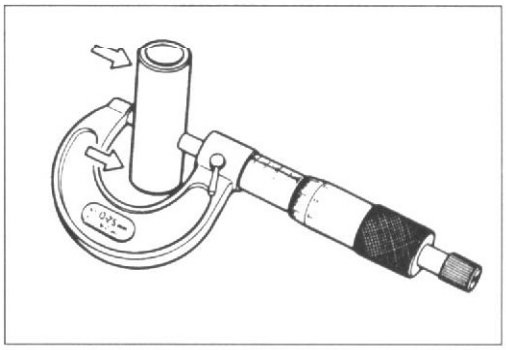
Measure the piston pin bore diameter using the small bore gauge. If the diameter exceeds the service limit, replace the piston with a new one.



TOOL 09900-20602: Dial gauge (1/1000 mm)
09900-22403: Small bore gauge (18 – 35 mm)

DATA Piston pin bore
Service Limit: 20.030 mm (0.7886 in)

Measure the piston pin outside diameter at three positions using the micrometer. If any measurement exceeds the service limit, replace the piston pin with a new one.



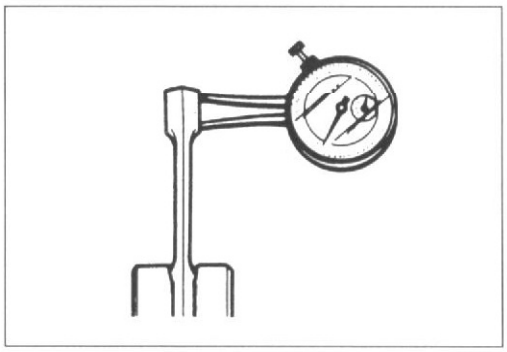
TOOL 09900-20205: Micrometer (0 – 25 mm)

DATA Piston pin O.D.
Service Limit: 19.980 mm (0.7866 in)

CONROD

CONROD SMALL END I.D.

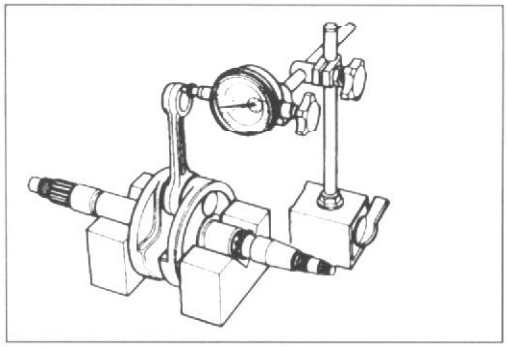
Measure the conrod small end inside diameter using the small bore gauge.
If the conrod small end inside diameter exceeds the service limit, replace the conrod with a new one.



TOOL 09900-20605: Dial calipers
DATA Conrod small end I.D.
Service Limit: 20.040 mm (0.7890 in)

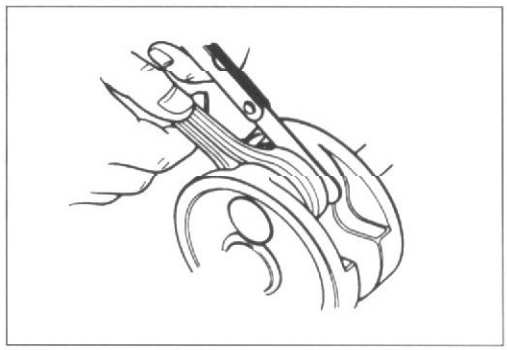
CONROD DEFLECTION AND BIG END SIDE CLEARANCE

Wear on the big end of the conrod can be estimated by checking the movement of the small end of the rod. This method can also be used to check the extent of wear on the parts of the conrod's big end.



TOOL 09900-20701: Magnetic stand
09900-20606: Dial gauge (1/100 mm)
09900-21304: V-block set (100 mm)
DATA Conrod deflection
Service Limit: 3.0 mm (0.12 in)

Push the big end of the conrod to one side and measure the side clearance using a thickness gauge. If the clearance exceeds the service limit, replace the crankshaft assembly with a new one or bring the deflection and the side clearance within the service limit by replacing the worn parts (conrod, big end bearing, crank pin, etc.) with new ones.

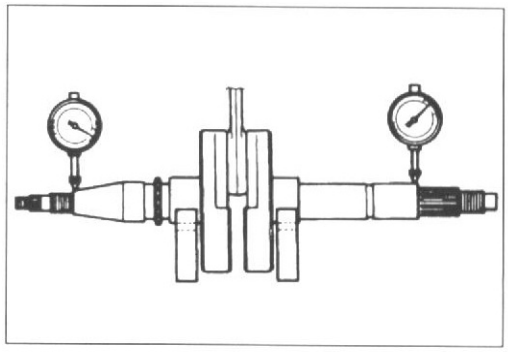


TOOL 09900-20803: Thickness gauge
DATA Big end side clearance
Service Limit: 1.00 mm (0.039 in)

CRANKSHAFT

CRANKSHAFT RUNOUT

Support the crankshaft using V-blocks and measure the crankshaft runout using the dial gauge, as shown. If the runout exceeds the service limit, replace the crankshaft with a new one.

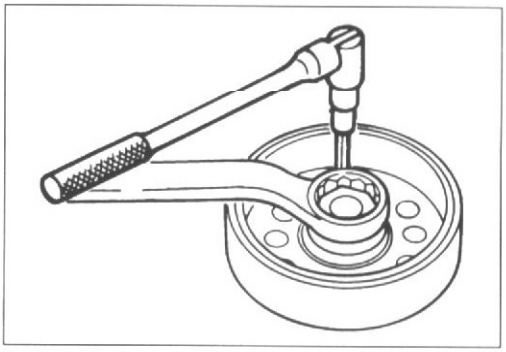


TOOL 09900-20606: Dial gauge (1/100 mm)
09900-20701: Magnetic stand
09910-21304: V-block set (100 mm)

DATA Crankshaft runout
Service Limit: 0.08 mm (0.003 in)

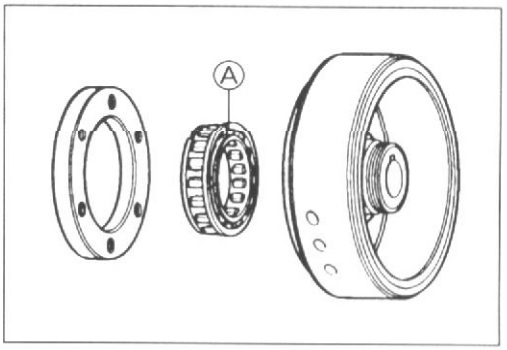
STARTER CLUTCH

- Hold the rotor with a 26 mm offset wrench and remove the hexagon bolts.



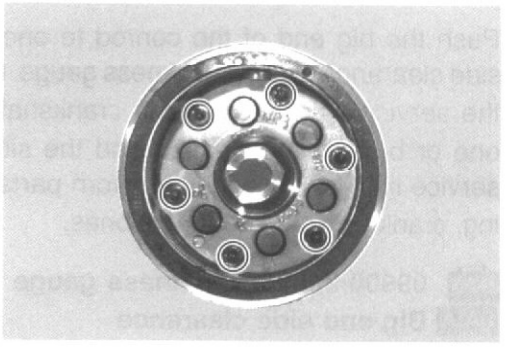
- Install the starter clutch in the proper direction as shown.

NOTE:
When installing the starter clutch onto the rotor, make sure that the notch Ⓐ in the bearing faces to the rotor.



- Apply engine oil to the starter clutch.

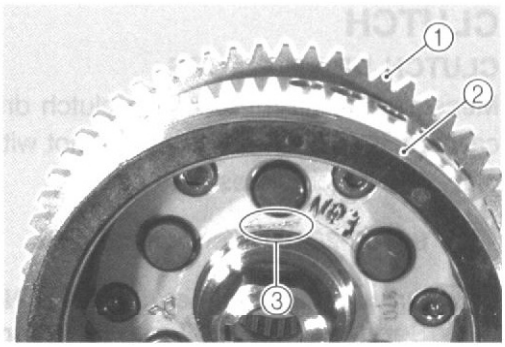
- Apply THREAD LOCK SUPER "1303" to the hexagon bolts, and then tighten them to the specified torque while holding the rotor and using a 26 mm offset wrench.



1303 99000-32030: THREAD LOCK SUPER "1303"

Starter clutch bolt: 26 N·m (2.6 kgf-m, 19.0 lb-ft)

- Install the starter gear ① to the starter clutch.
- Check that the rotor ② turns in the direction of the arrow ③ on the rotor while holding the starter gear, and that the rotor never turns in the opposite direction of the arrow.

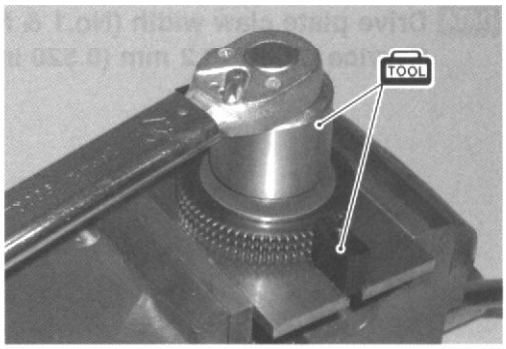


STARTER TORQUE LIMITER

⚠ CAUTION

Do not attempt to disassemble the starter torque limiter. It is unserviceable.

Check the slip torque of the starter torque limiter using the special tools and vise as shown, if the slip torque is not within the specified torque, replace the starter torque limiter with a new one.



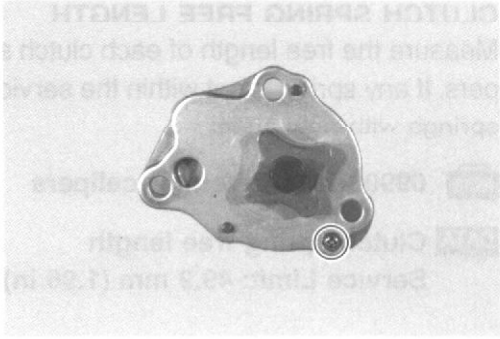
TOOL 09930-73170: Starter torque limiter holder
09930-73180: Starter torque limiter socket

Slip torque:
30 – 55 N·m (3.0 – 5.5 kgf-m, 21.5 – 40.0 lb-ft)

OIL PUMP

⚠ CAUTION

The oil pump case securing screw is applied with SUZUKI THREAD LOCK SUPER "1303". If an attempt is made to overhaul the oil pump assembly, the screw may be damaged. Only the oil pump unit is available as a replacement.

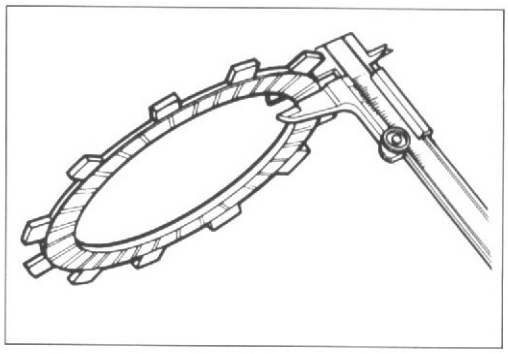


1303 99000-32030: THREAD LOCK SUPER "1303"

CLUTCH

CLUTCH DRIVE PLATES

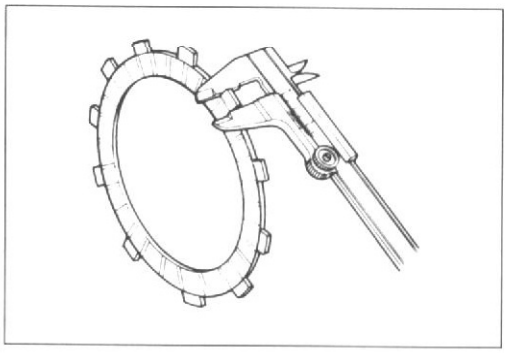
Measure the thickness of the clutch drive plates using vernier calipers. If a clutch drive plate is not within the service limit, replace the clutch plates as a set.



TOOL **09900-20101: Vernier calipers**

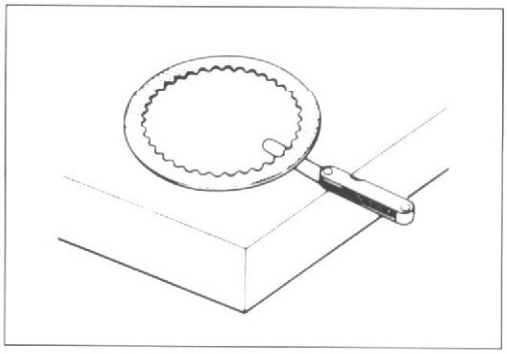
DATA **Drive plate thickness (No.1 & No.2)**
Service Limit: 2.62 mm (0.103 in)

DATA **Drive plate claw width (No.1 & No.2)**
Service Limit: 13.2 mm (0.520 in)



CLUTCH DRIVEN PLATES

Measure each clutch driven plate for distortion using the thickness gauge. If a clutch driven plate is not within the service limit, replace the clutch plates as a set.

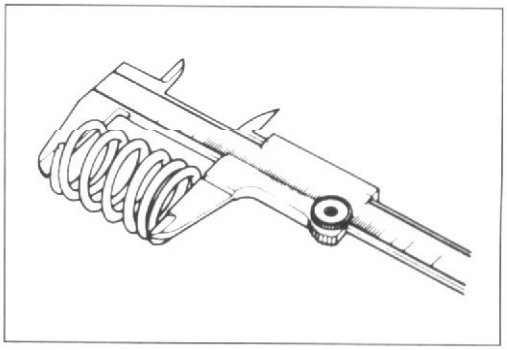


TOOL **09900-20803: Thickness gauge**

DATA **Driven plate distortion**
Service Limit: 0.10 mm (0.004 in)

CLUTCH SPRING FREE LENGTH

Measure the free length of each clutch spring using vernier calipers. If any spring is not within the service limit, replace all of the springs with new ones.



TOOL **09900-20101: Vernier calipers**

DATA **Clutch spring free length**
Service Limit: 49.9 mm (1.96 in)

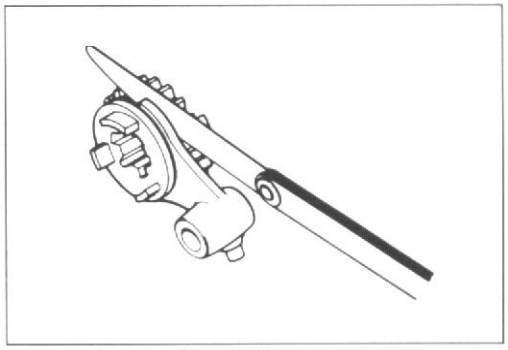
GEARSHIFT FORK AND GEAR

GEARSHIFT-FORK-TO-GEARSHIFT-FORK GROOVE CLEARANCE

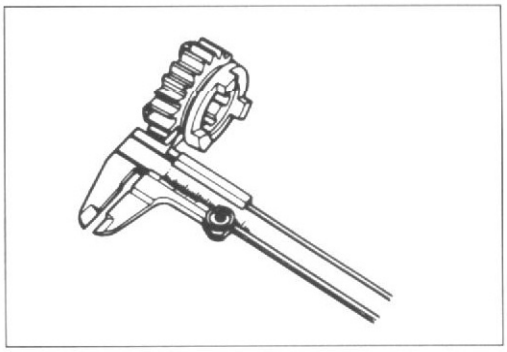
Clearance for each gearshift fork plays an important role in the smoothness and positiveness of the shifting process.
Measure the gearshift fork clearance in the groove of its respective gear using the thickness gauge.
If the clearance exceeds specification, replace the fork, its respective gear, or both.

TOOL **09900-20803: Thickness gauge**
09900-20101: Vernier calipers

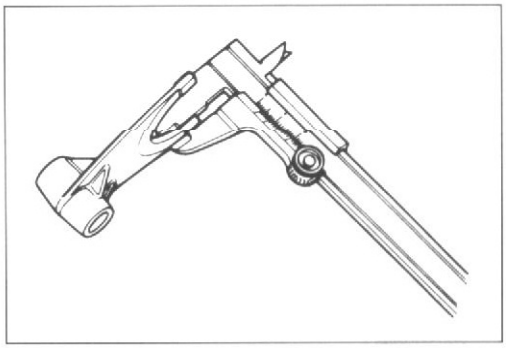
DATA **Gearshift-fork-to-gearshift-fork-groove clearance**
Service Limit: 0.50 mm (0.020 in)



DATA **Shift fork groove width**
Standard: 4.8 – 4.9 mm (0.189 – 0.193 in)



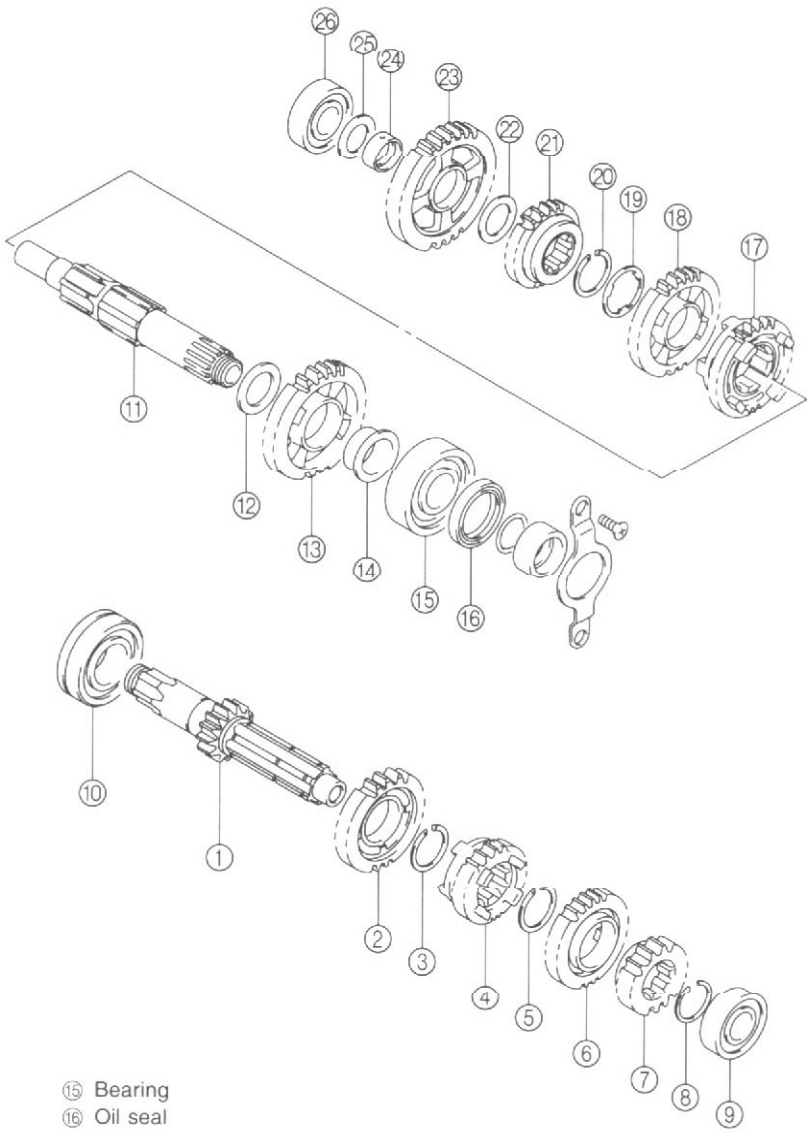
DATA **Shift fork thickness**
Standard: 4.6 – 4.7 mm (0.181 – 0.185 in)



TRANSMISSION

DISASSEMBLY

Disassemble the transmission gears as shown.



① Countershaft
② 5th (top) drive gear
③ Circlip
④ 3rd drive gear
⑤ Circlip
⑥ 4th drive gear
⑦ 2nd drive gear
⑧ Circlip
⑨ Bearing
⑩ Bearing
⑪ Driveshaft
⑫ Washer
⑬ 2nd driven gear
⑭ Spacer
⑮ Bearing
⑯ Oil seal
⑰ 4th driven gear
⑱ 3rd driven gear
⑲ Washer
⑳ Circlip
㉑ 5th (top) driven gear
㉒ Washer
㉓ 1st (low) driven gear
㉔ Spacer
㉕ Washer
㉖ Bearing

REASSEMBLY

Reassemble the transmission in the reverse order of disassembly. Pay special attention to the following points:

NOTE:
Before installing the gears, apply engine oil to the inner surface of each gear and bushing.

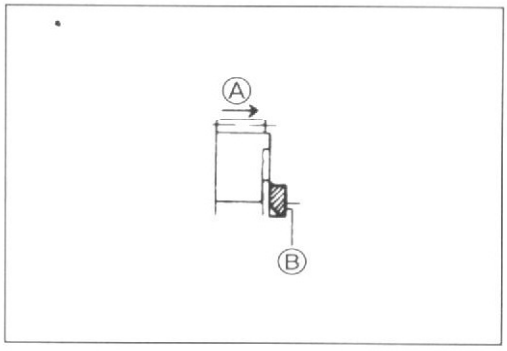
⚠ CAUTION

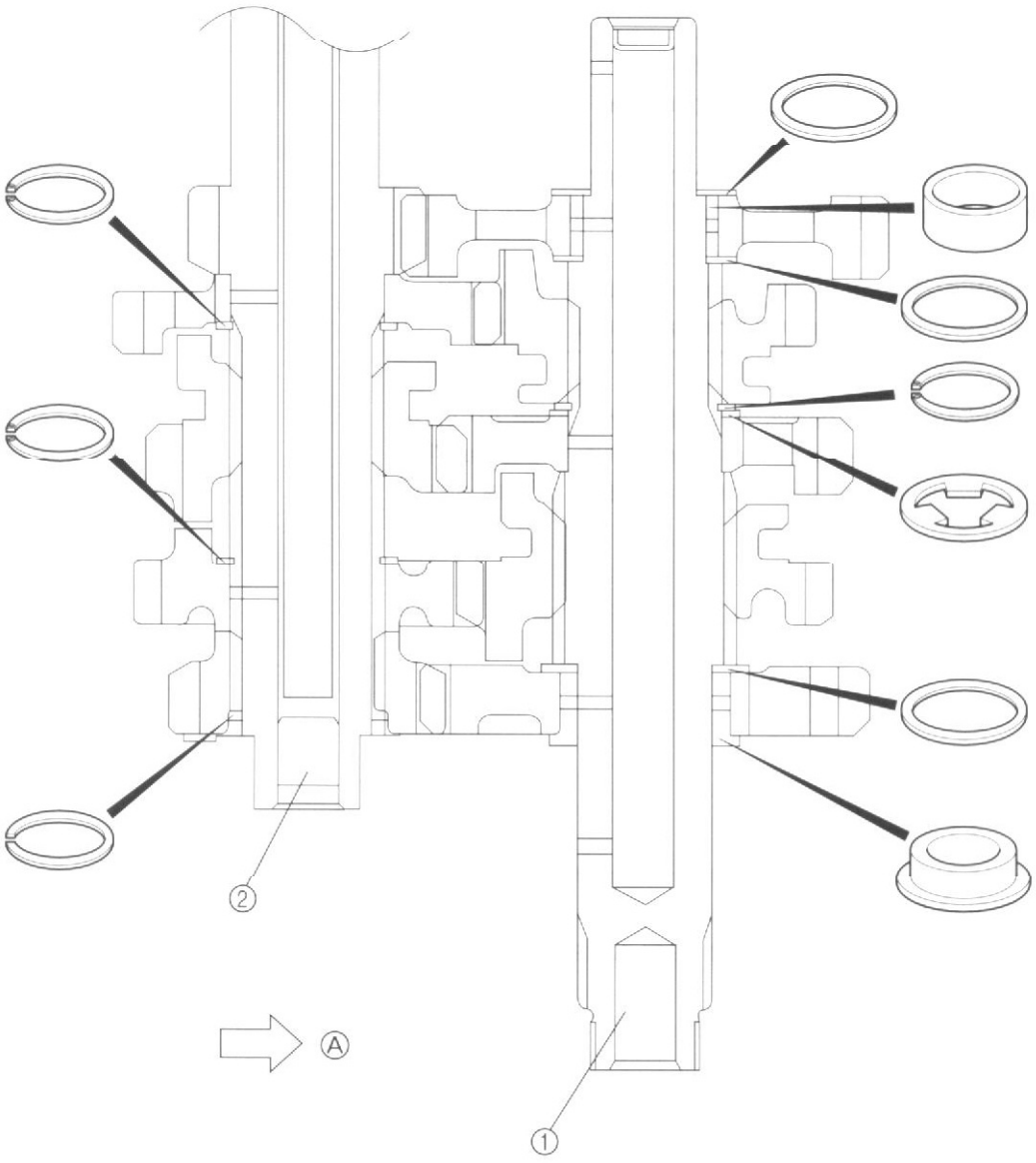
- **Never reuse a circlip. After a circlip has been removed from a shaft, it should be discarded and a new circlip must be installed.**
- **When installing a new circlip, do not expand the end gap larger than required to slip the circlip over the shaft.**
- **After installing a new circlip, make sure that it is completely seated in its groove and securely fitted.**

NOTE:
When reassembling the transmission, attention must be given to the locations and positions of the washers and circlips. The cross sectional view shows the correct position of the gears, washers, and circlips. (☞ 3-42)

- When installing a new circlip, pay attention to the direction of the circlip. Fit it to the side where the thrust is, as shown. The rounded side should be against the gear surface.

Ⓐ Thrust
Ⓑ Sharp edge

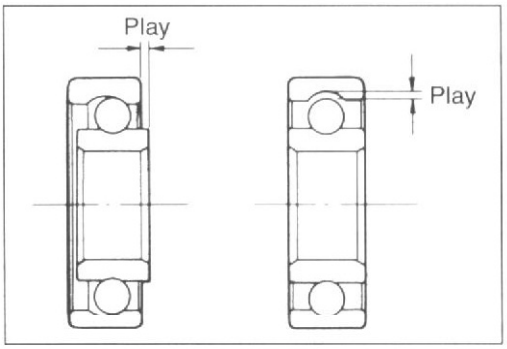




① Driveshaft
② Countershaft

BEARINGS

Wash the bearing with a cleaning solvent and lubricate it with motor oil before inspection. Rotate the inner race and check to see that it turns smoothly. If it does not turn quietly and smoothly, or if there are signs of any abnormalities, the bearing is defective and must be replaced with a new one as follows.



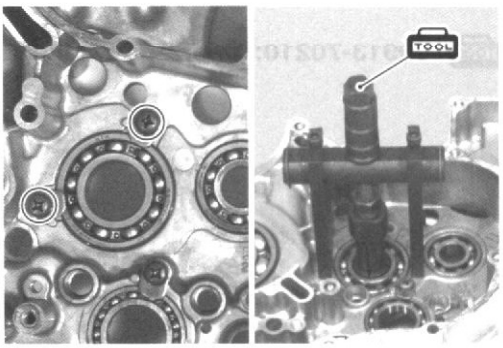
RIGHT COUNTERSHAFT BEARING

- Remove the bearing retainer.
- Remove the right countershaft bearing using the special tool.

09921-20220: Bearing remover set

⚠ CAUTION

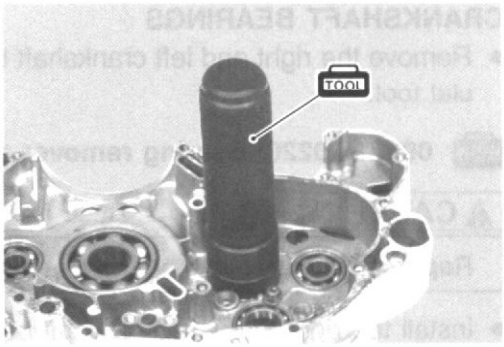
Replace the removed bearing with a new one.



- Install the right countershaft bearings using the special tool.

09913-70210: Bearing installer set

- Apply a small quantity of THREAD LOCK "1342" or THREAD LOCK SUPER "1322" to the bearing retainer screws, and tighten them securely.



For USA

99000-32050: THREAD LOCK "1342"

For the other countries

99000-32110: THREAD LOCK SUPER "1322"

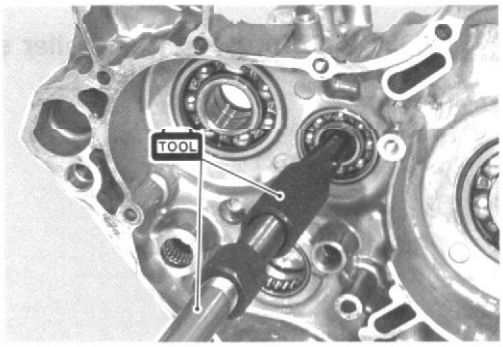
LEFT COUNTERSHAFT BEARING

- Remove the left countershaft bearing using the special tool.

09923-73210: Bearing remover
09930-30102: Sliding hammer

⚠ CAUTION

Replace the removed bearing with a new one.



- Install the left countershaft bearing using the special tool.

09913-70210: Bearing installer set

DRIVESHAFT BEARINGS

- Remove the right and left driveshaft bearings using the special tool.

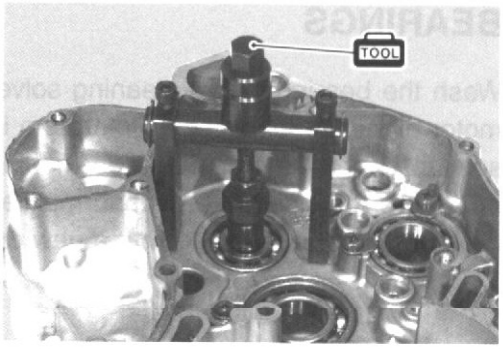
TOOL 09921-20220: Bearing remover set

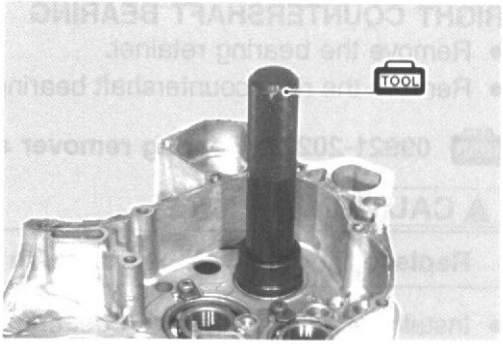
⚠ CAUTION

Replace the removed bearings with new ones.

- Install the right and left driveshaft bearings using the special tool.

TOOL 09913-70210: Bearing installer set





CRANKSHAFT BEARINGS

- Remove the right and left crankshaft bearings using the special tool.

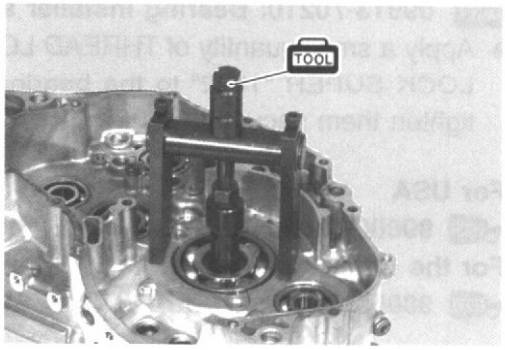
TOOL 09921-20220: Bearing remover set

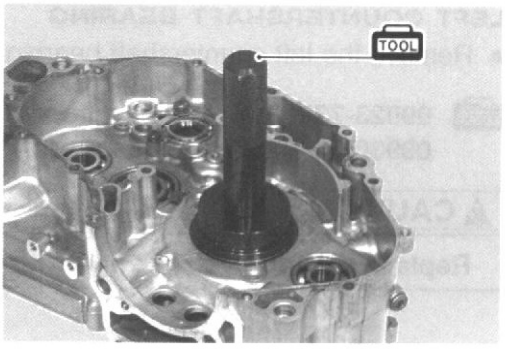
⚠ CAUTION

Replace the removed bearings with new ones.

- Install the right and left crankshaft bearing using the special tool.

TOOL 09913-70210: Bearing installer set





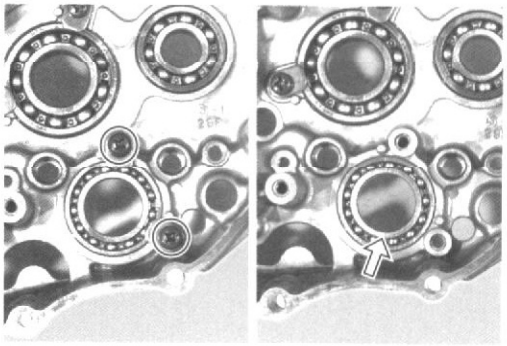
RIGHT GEARSHIFT CAM BEARING

- Remove the bearing retainer.
- Remove the right gearshift cam bearing.

⚠ CAUTION

Replace the removed bearing with a new one.

- Install the right gearshift cam bearing.



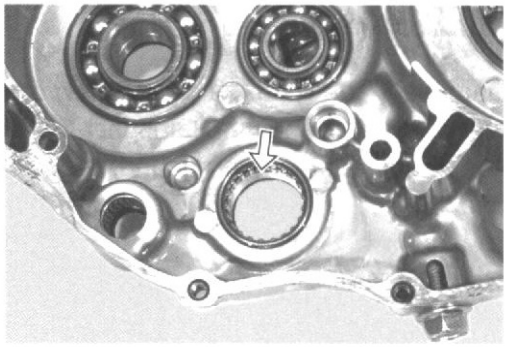
LEFT GEARSHIFT CAM BEARING

- Remove the left gear shift cam bearing.

⚠ CAUTION

Replace the removed bearing with a new one.

- Install the left gearshift cam bearing.



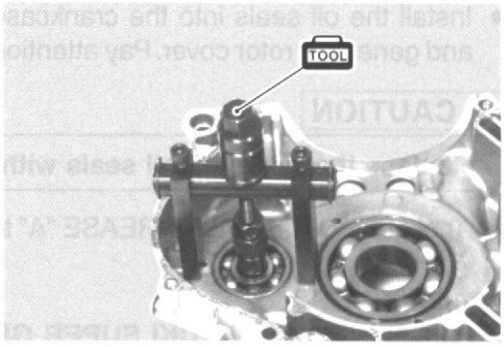
RIGHT BALANCER SHAFT BEARING

- Remove the right balancer shaft bearing using the special tool.

TOOL 09921-20220: Bearing remover set

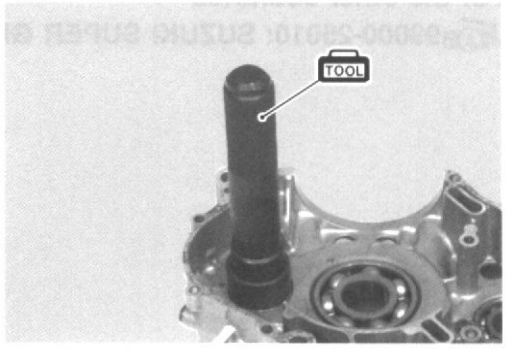
⚠ CAUTION

Replace the removed bearing with a new one.



- Install the right balancer shaft bearing using the special tool.

TOOL 09913-70210: Bearing installer set



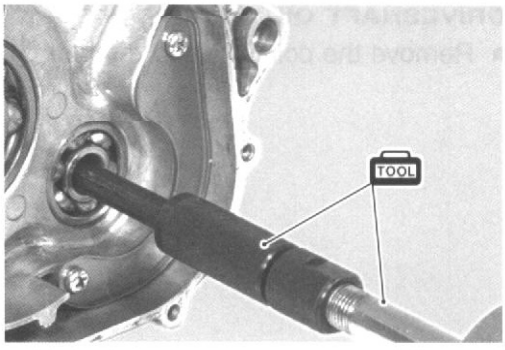
LEFT BALANCER SHAFT BEARING

- Remove the left balancer shaft bearing using the special tools.

TOOL 09921-20210: Bearing remover
09930-30102: Sliding hammer

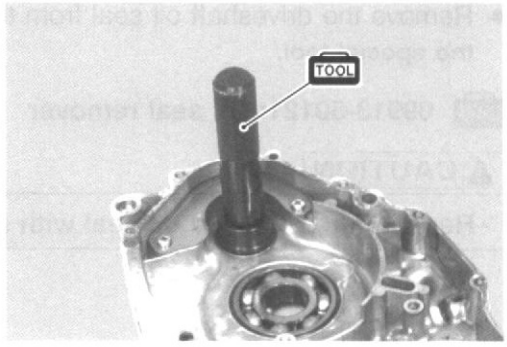
⚠ CAUTION

Replace the removed bearing with a new one.



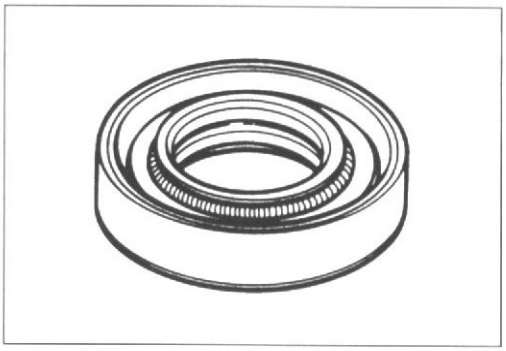
- Install the left balancer shaft bearing using the special tool.

TOOL 09913-70210: Bearing installer set



OIL SEALS

Damage to the lip of the oil seal may result in leakage of the air/fuel mixture or engine oil. Inspect the oil seal for wear or damage. If any damages are found, replace the oil seal with a new one.



- Install the oil seals into the crankcase, clutch housing case, and generator rotor cover. Pay attention to the following points:

⚠ CAUTION

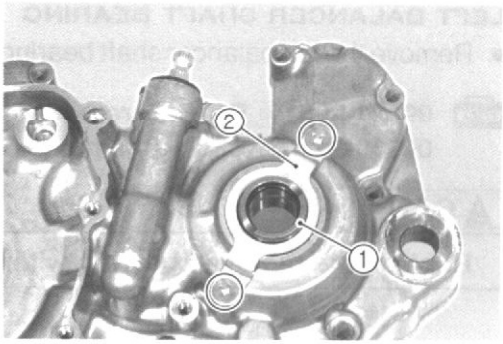
Replace the removed oil seals with new ones.

- Apply SUZUKI SUPER GREASE "A" to the lip of the oil seals.

For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"

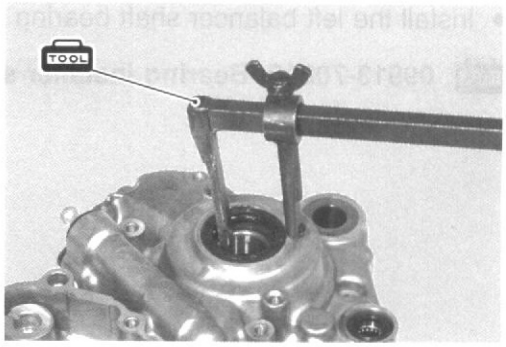
DRIVESHAFT OIL SEAL

- Remove the collar ① and retainer ②.



- Remove the driveshaft oil seal from the left crankcase using the special tool.

TOOL 09913-50121: Oil seal remover

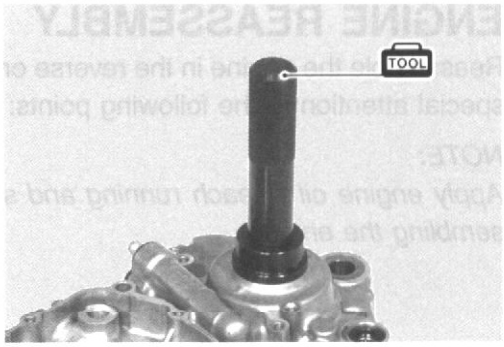


⚠ CAUTION

Replace the removed oil seal with a new one.

- Install the driveshaft oil seal into the left crankcase slowly, using the special tool.

09913-70210: Bearing installer set



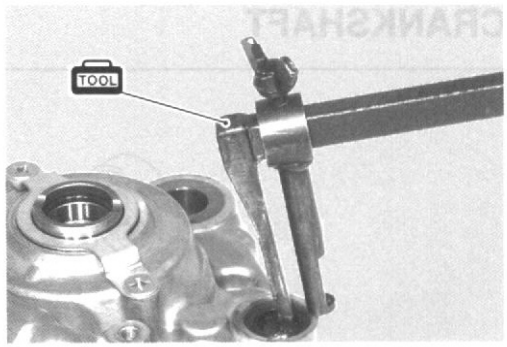
GEARSHIFT SHAFT OIL SEAL

- Remove the gearshift shaft oil seal from the left crankcase, slowly using the special tool.

09913-50121: Oil seal remover

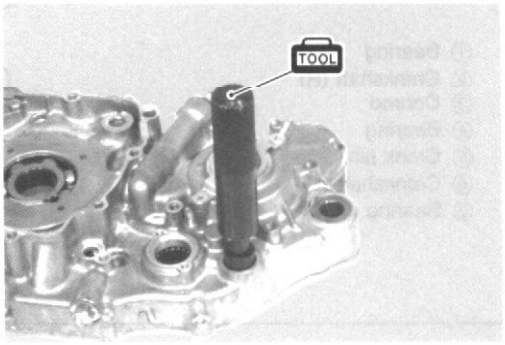
⚠ CAUTION

Replace the removed oil seal with a new one.



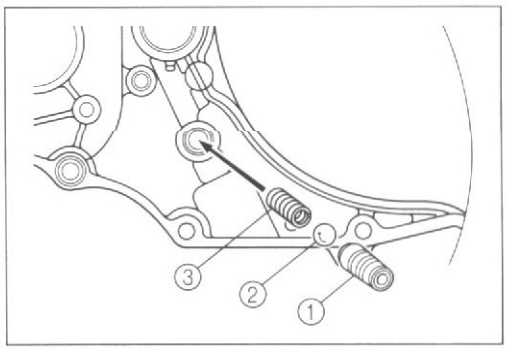
- Install the gearshift shaft oil seal into the left crankcase slowly, using the special tool.

09913-70210: Bearing installer set



OIL CHECK VALVE

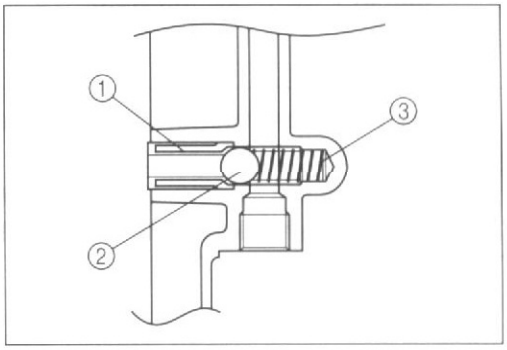
- Remove the bushing ①, oil check valve ball ② and spring ③ from the right crankcase cover.



- Install the spring ③, oil check valve ball ② and bushing ① to the right crankcase as shown.

⚠ CAUTION

The rubber part of bushing ① must face to the outside.

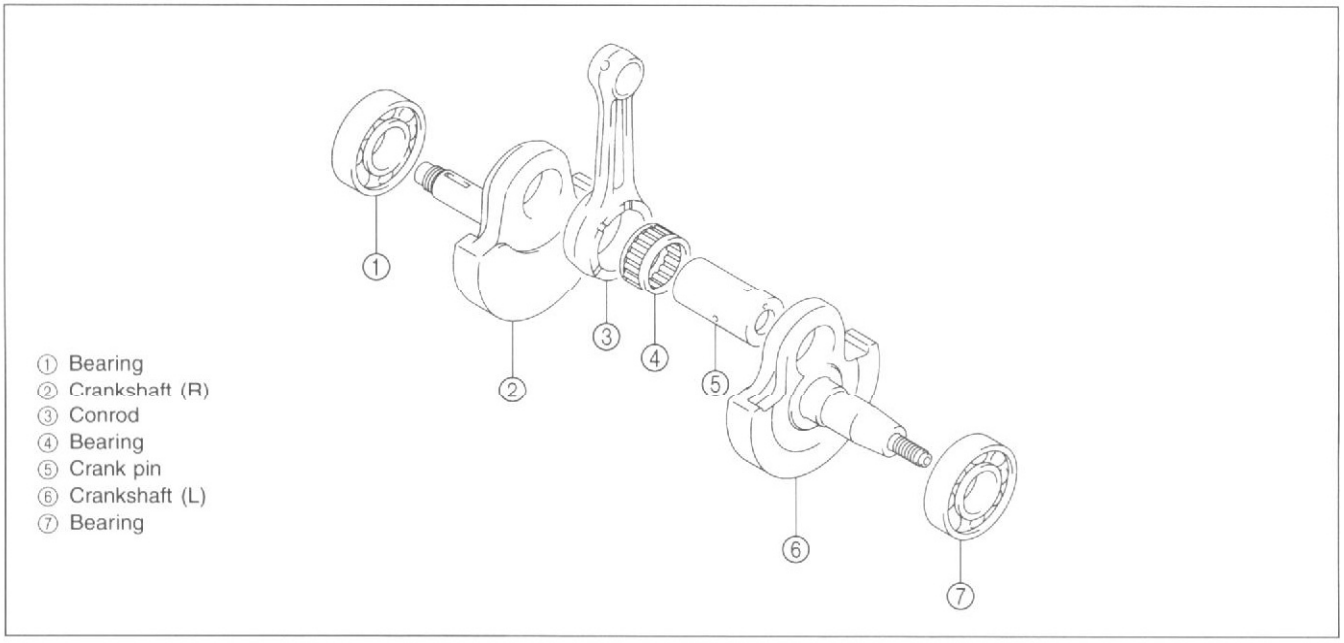


ENGINE REASSEMBLY

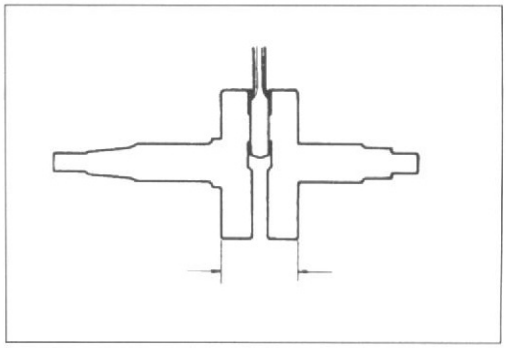
Reassemble the engine in the reverse order of disassembly. Pay special attention to the following points:

NOTE:
Apply engine oil to each running and sliding part before reassembling the engine.

CRANKSHAFT



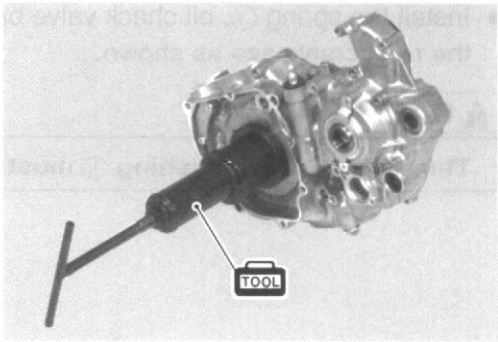
- Determine the width between the webs referring to the figure when rebuilding the crankshaft.



DATA Crank-web-to-crank-web width
Standard: 62.0 ± 0.1 mm (2.441 ± 0.004 in)

- When mounting the crankshaft in the crankcase, it is necessary to pull its left end into the crankcase by using the special tools.

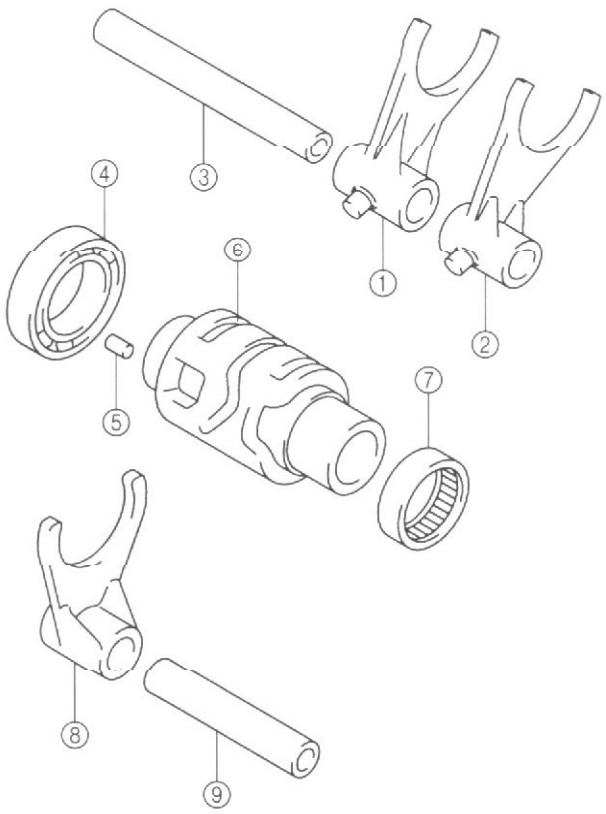
TOOL 09910-32812: Crankshaft installer
09940-52861: Attachment



⚠ CAUTION

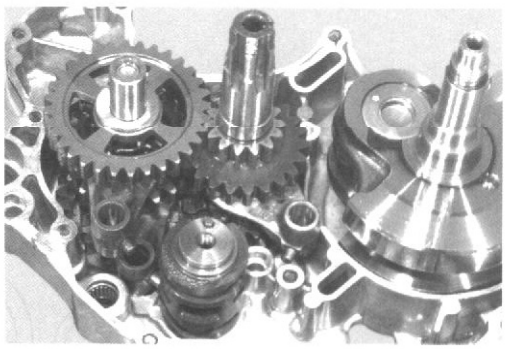
Never fit the crankshaft into the crankcase by striking it with a plastic hammer.
Always use the special tool, otherwise the accuracy of the crankshaft alignment will be affected.

GEARSHIFT CAM AND FORK



① Gearshift fork No.1
② Gearshift fork No.2
③ Gearshift fork shaft
④ Bearing
⑤ Pin
⑥ Gearshift cam
⑦ Bearing
⑧ Gearshift fork No.3
⑨ Gearshift fork shaft

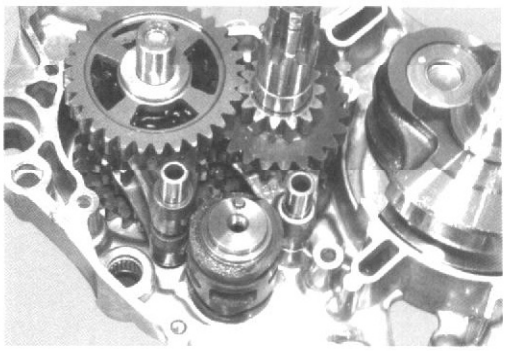
- Install the gearshift forks into the gearshifting grooves in the correct position and direction.



- Install the gearshift fork shafts.

NOTE.

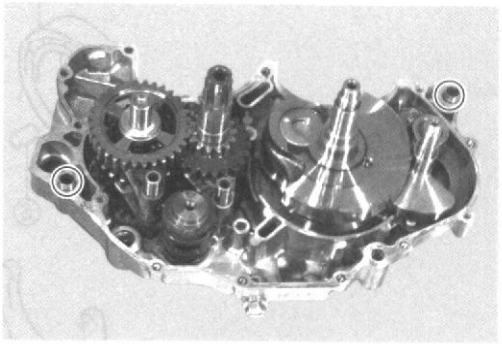
* *After the gearshift fork shaft and gearshift forks have been fitted, make sure that the gears engage normally.*
* *Set the transmission gears to the neutral position.*



CRANKCASE

Reassemble the crankcase in the reverse order of disassembly. Pay special attention to the following points:

- Thoroughly remove the sealant material and oil stains on the mating surface of the right and left crankcases.
- Before installing the sump filter, wash the sump filter with cleaning solvent, and then blow compressed air through it to dry it off.
- Install the dowel pins to the left crankcase.
- Apply engine oil to the conrod big end and to the transmission gears.



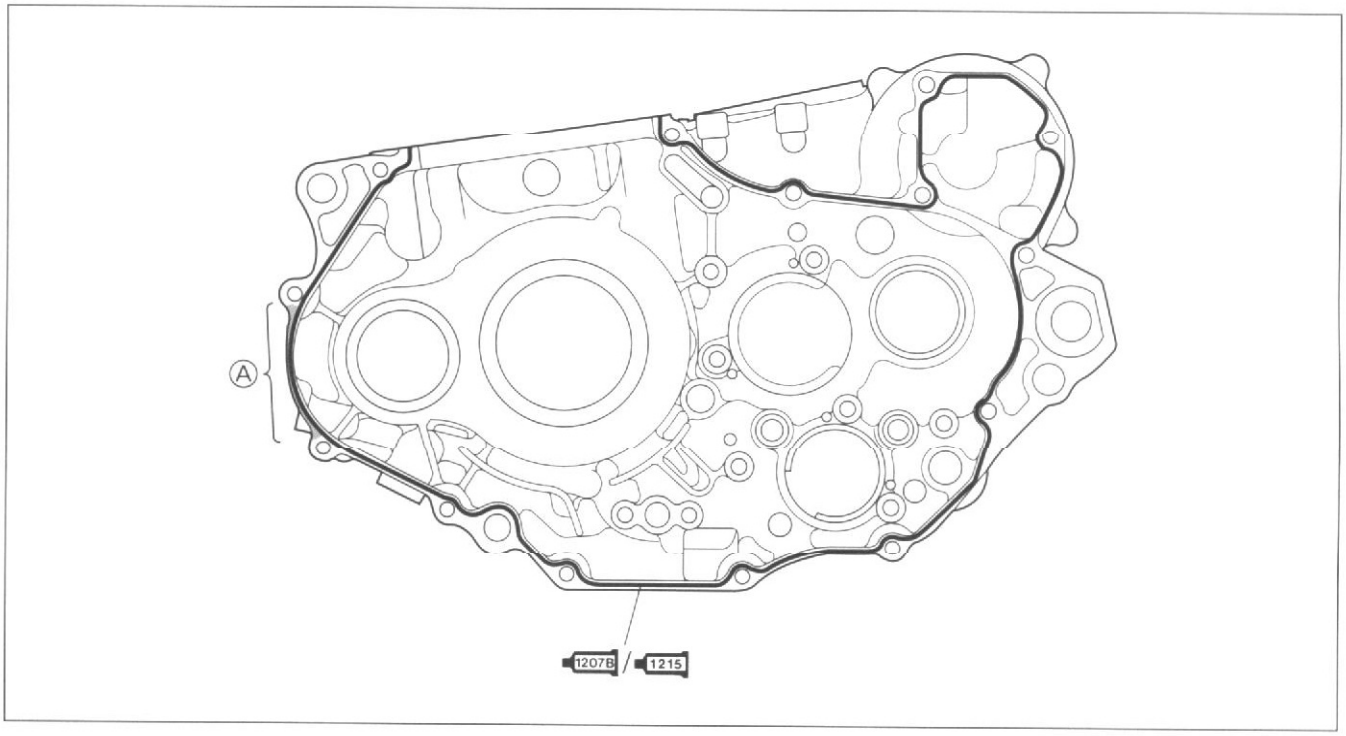
- Apply SUZUKI BOND "1207B" or "1215" to the mating surface of the right crankcase and section Ⓐ of both crankcases as shown.

For USA

1207B 99104-31140: SUZUKI BOND "1207B"

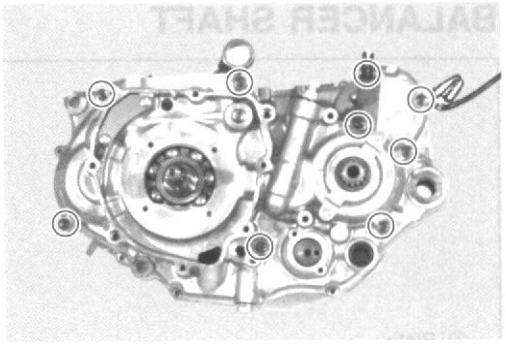
For the other countries

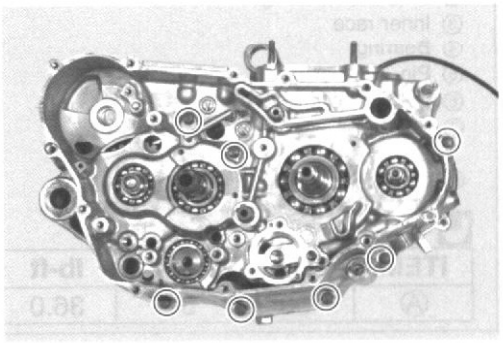
1215 99000-31110: SUZUKI BOND "1215"



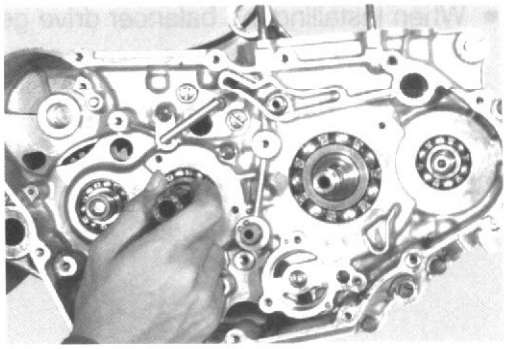
- Tighten the crankcase bolts to the specified torque.

Crankcase bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)



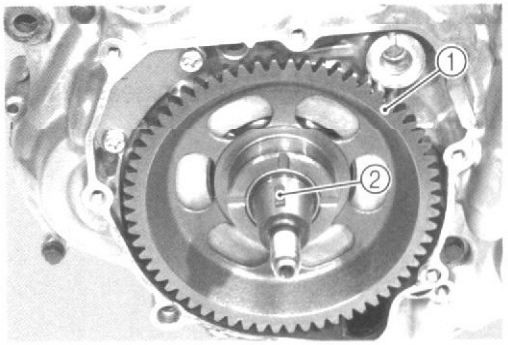


- After the crankcase bolts have been tightened, check if the crankshaft, countershaft, and driveshaft rotate smoothly. If a large resistance is felt to rotation, try to free the shafts by tapping them with a plastic mallet.



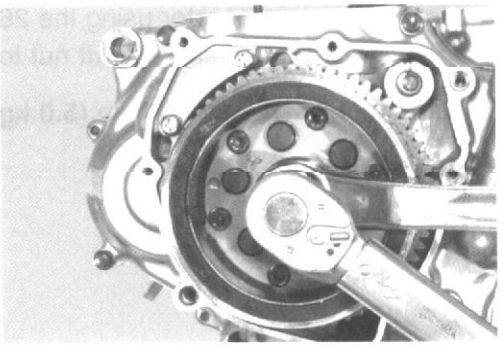
STARTER CLUTCH AND GENERATOR ROTOR

- Remove the grease from the tapered portion of the crankshaft and the generator rotor.
- Install the starter clutch gear ① and key ②.

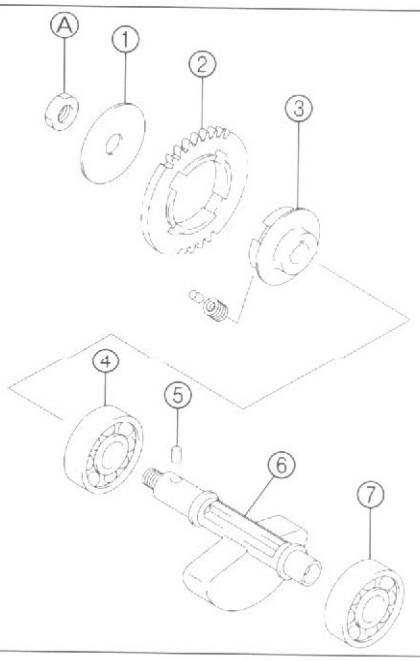


- Tighten the generator rotor nut to the specified torque using a 26 mm offset wrench.

Generator rotor nut: 100 N·m (10.0 kgf-m, 72.5 lb-ft)



BALANCER SHAFT

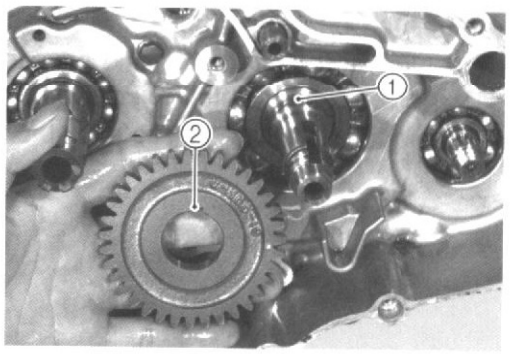


① Plate
② Balancer driven gear
③ Inner race
④ Bearing
⑤ Pin
⑥ Balancer shaft
⑦ Bearing

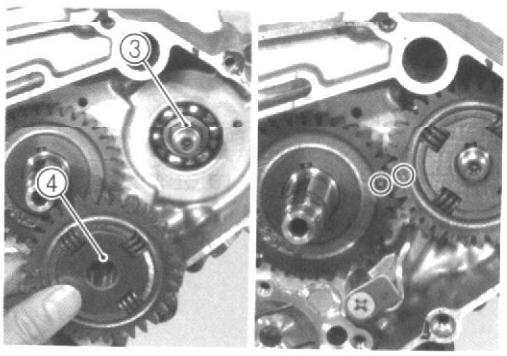
Ⓐ Balancer shaft nut

ITEM	N·m	kgf-m	lb-ft
Ⓐ	50	5.0	36.0

- When installing the balancer drive gear, align the pin ① with the groove ②.

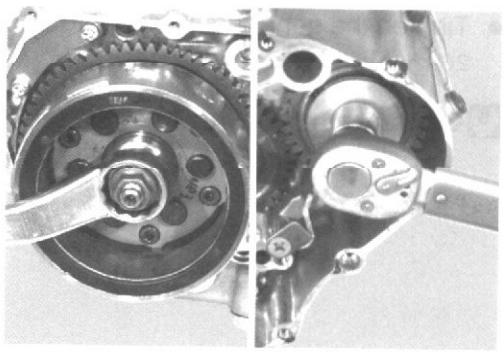


- When installing the balancer driven gear, align the pin ③ with the groove ④.
- Install the balancer driven gear by aligning the matching marks.



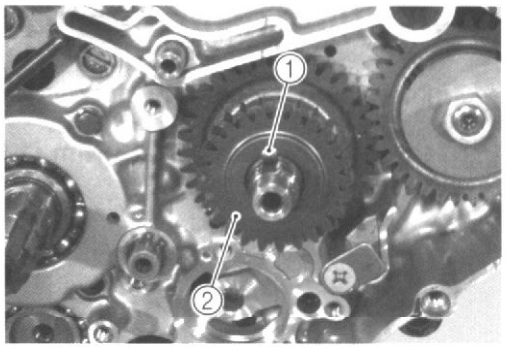
- Hold the generator rotor using the 26 mm offset wrench, and then tighten the balancer shaft nut to the specified torque.

Balancer shaft nut: 50 N·m (5.0 kgf-m, 36.0 lb-ft)



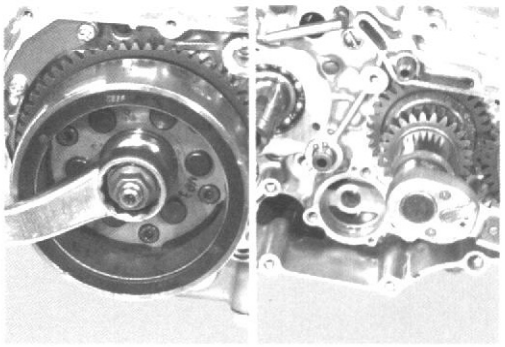
PRIMARY DRIVE GEAR

- Install the key ① and primary drive gear ②.



- Hold the generator rotor using the 26 mm offset wrench, and then tighten the primary drive gear nut to the specified torque.

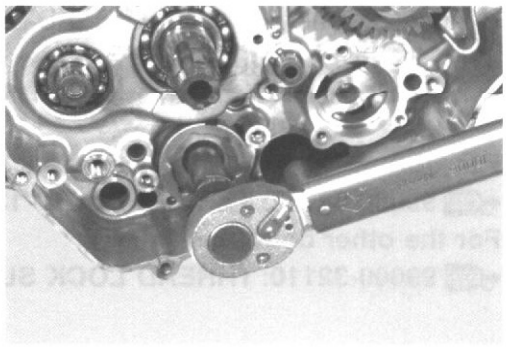
Primary drive gear nut: 110 N·m (11.0 kgf-m, 79.5 lb-ft)



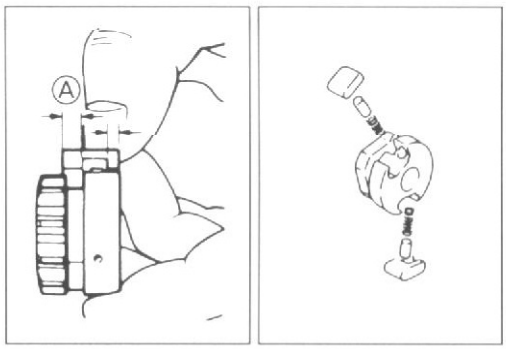
GEARSHIFT CAM DRIVEN GEAR

- Tighten the gearshift cam driven gear bolt to the specified torque.

Gearshift cam driven gear bolt:
24 N·m (2.4 kgf-m, 17.5 lb-ft)

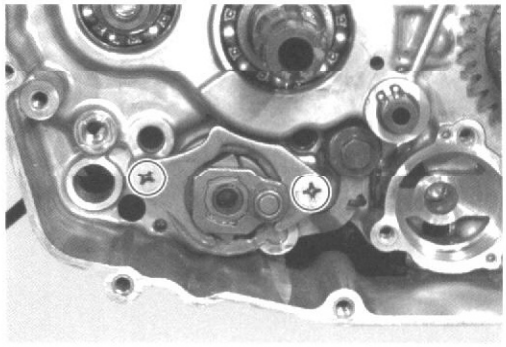


- Install each pawl lifter into the gearshift cam driven gear. The large shoulder Ⓐ must face to the outside.

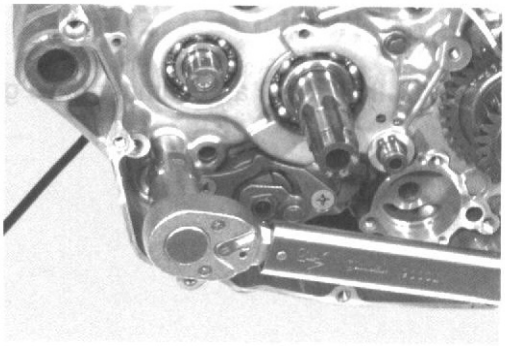


- Apply a small quantity of THREAD LOCK "1342" or THREAD LOCK SUPER "1322" to the pawl lifter screws, and then tighten them securely.

For USA
99000-32050: THREAD LOCK "1342"
For the other countries
99000-32110: THREAD LOCK SUPER "1322"



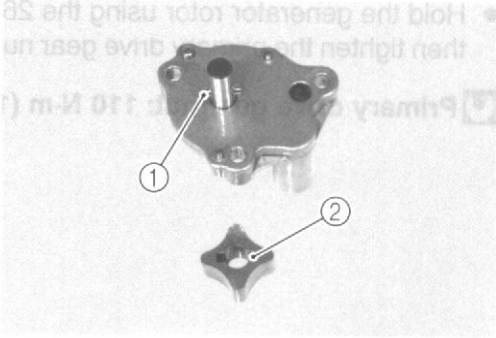
GEARSHIFT SHAFT



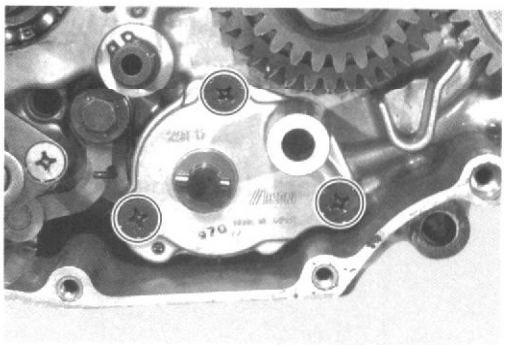
- Tighten the gearshift arm stopper to the specified torque.

Gearshift arm stopper: 19 N·m (1.9 kgf-m, 13.5 lb-ft)

OIL PUMP

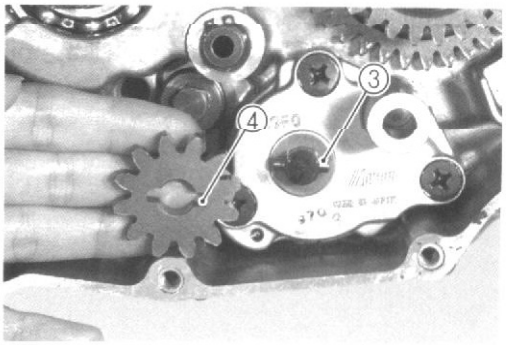


- Before mounting the oil pump, apply engine oil to the sliding surfaces of the oil pump case, outer rotor, inner rotor, and shaft.
- When installing the inner rotor, align the pin ① with the groove ②.



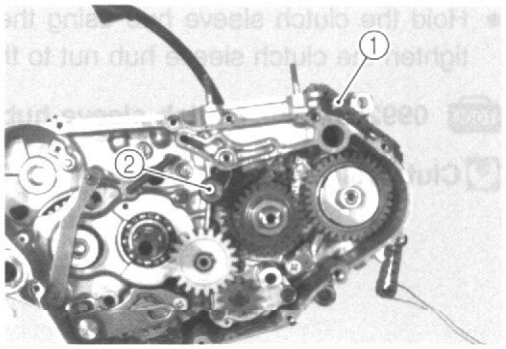
- Apply a small quantity of THREAD LOCK "1342" or THREAD LOCK SUPER "1322" to the threaded parts of the oil pump mounting screws, and then tighten them.

For USA
99000-32050: THREAD LOCK "1342"
For the other countries
99000-32110: THREAD LOCK SUPER "1322"



- When installing the oil pump driven gear, align the pin ③ with the groove ④.

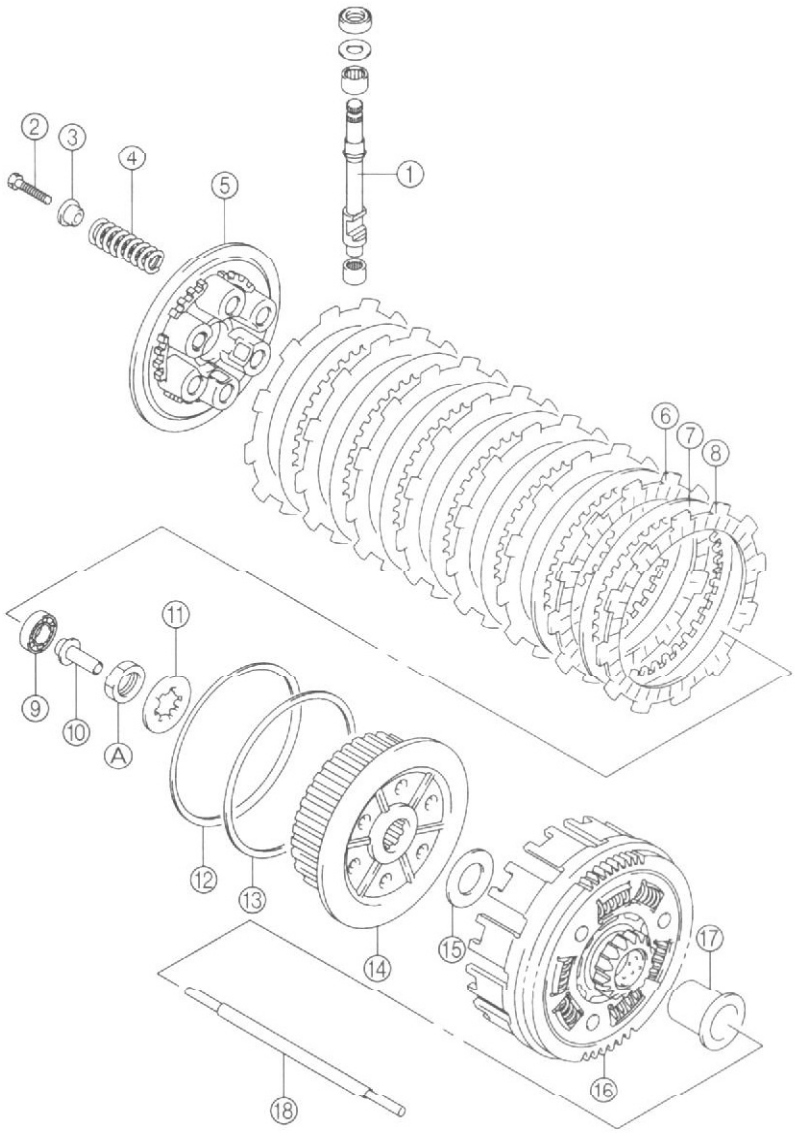
CAM CHAIN



- Install the cam chain ① on to the sprocket.
- Tighten the cam chain tensioner mounting bolt ② to the specified torque.

Cam chain tensioner mounting bolt:
10 N·m (1.0 kgf-m, 7.0 lb-ft)

CLUTCH



① Clutch release camshaft
② Bolt
③ Spring retainer
④ Spring
⑤ Pressure plate
⑥ Drive plate (7 pcs)
⑦ Driven plate (7 pcs)
⑧ Drive plate (1 pc)
⑨ Bearing
⑩ Push piece
⑪ Washer
⑫ Spring washer
⑬ Spring washer seat
⑭ Clutch sleeve hub
⑮ Washer
⑯ Primary driven gear assembly
⑰ Spacer
⑱ Push rod

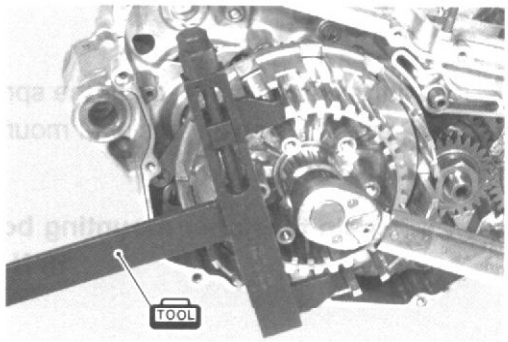
Ⓐ Clutch sleeve hub nut

ITEM	N·m	kgf-m	lb-ft
Ⓐ	70	7.0	50.5

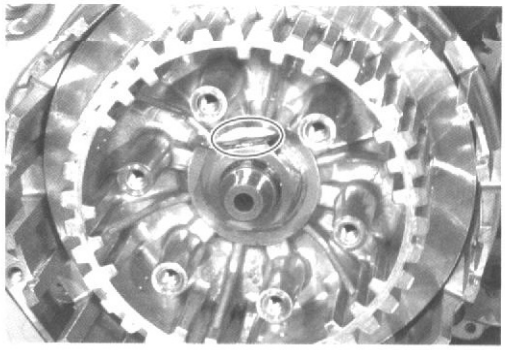
- Hold the clutch sleeve hub using the special tool, and then tighten the clutch sleeve hub nut to the specified torque.

09920-53740: Clutch sleeve hub holder

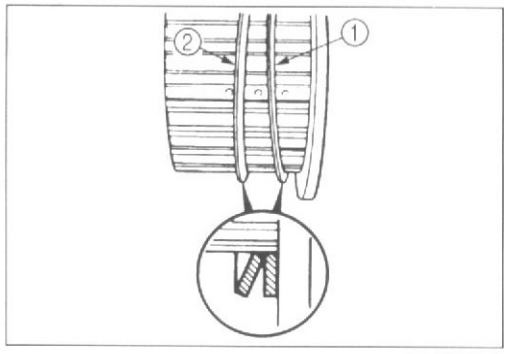
Clutch sleeve hub nut: 70 N·m (7.0 kgf-m, 50.5 lb-ft)



- Bend the tongue of the washer securely.



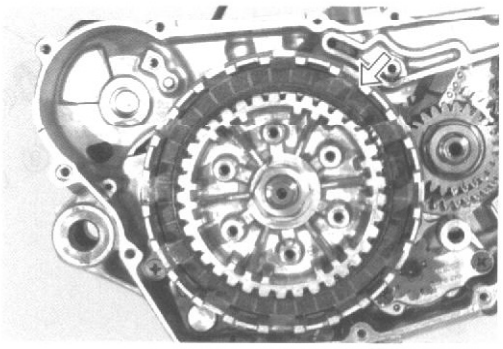
- Install the spring washer seat ① and spring washer ② onto the clutch sleeve hub correctly.



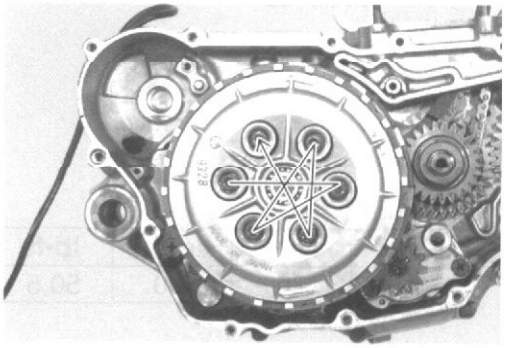
- Insert the clutch drive plates and driven plates one by one into the clutch sleeve hub in the prescribed order.

NOTE:

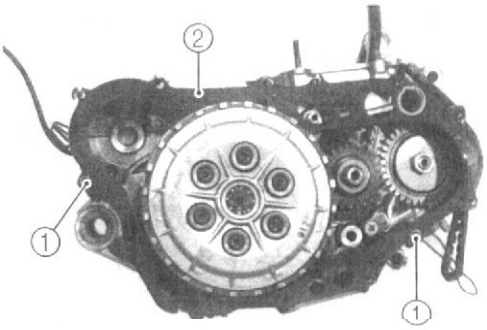
* *Be sure to install the drive plate with an inside diameter of 122.5 mm (4.82 in), first.*
* *Two different types of drive plates are used: one with an inside diameter of 122.5 mm (4.82 in) and seven with an inside diameter of 116 mm (4.5 in). For further information refer to page 3-55.*



- Tighten the clutch spring set bolts securely in diagonal stages.



RIGHT CRANKCASE COVER



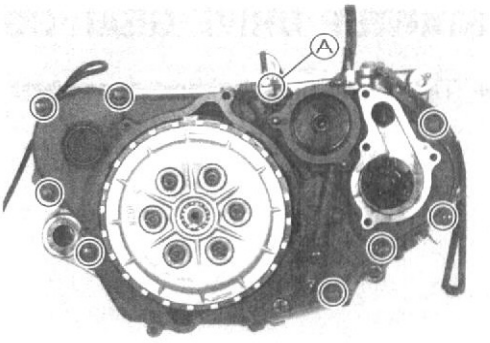
- Install the dowel pins ① and new gasket ②.

⚠ CAUTION

Use a new gasket to prevent oil leakage.

- Tighten the right crankcase cover bolts securely.

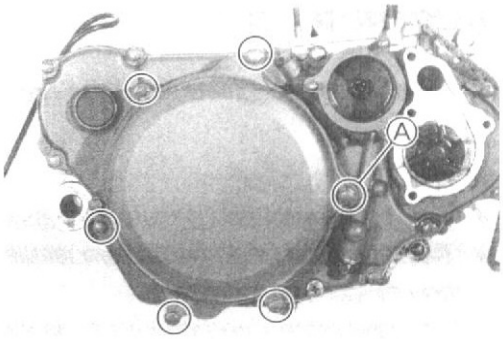
NOTE:
Install the new gasket onto the right crankcase cover bolt Ⓐ as shown.



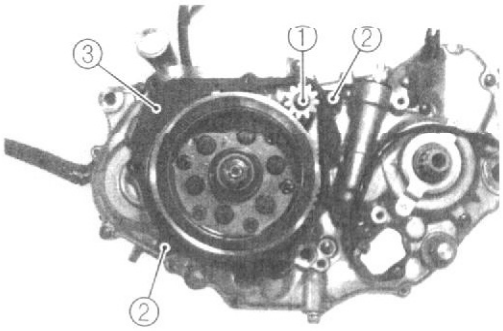
CLUTCH COVER

- Tighten the clutch cover bolts securely.

NOTE:
Install the new gasket onto the clutch cover bolt Ⓐ as shown.



GENERATOR ROTOR COVER

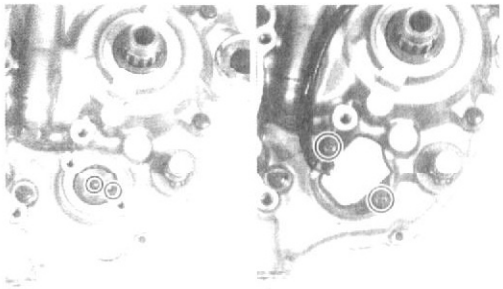


- Install the starter driven gear ①, dowel pins ②, and new gasket ③.

⚠ CAUTION

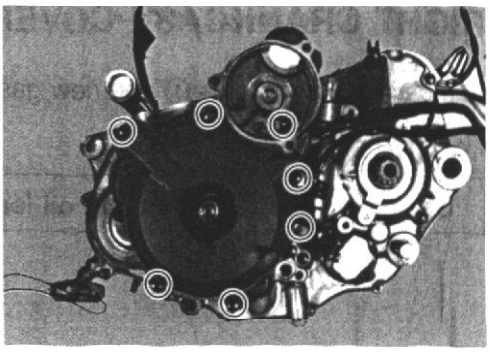
Use a new gasket to prevent oil leakage.

NEUTRAL SWITCH



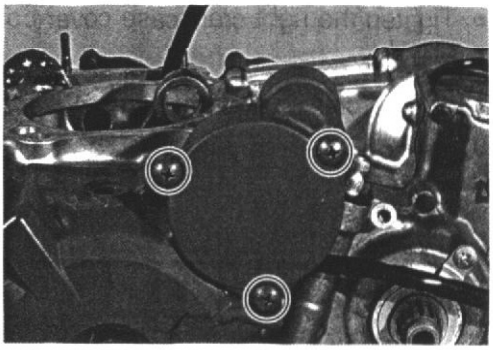
- Install the springs and switch contacts.
- Install the neutral switch.

- Tighten the generator rotor cover bolts securely.



STARTER DRIVE GEAR COVER

- Tighten the starter drive gear cover screws securely.

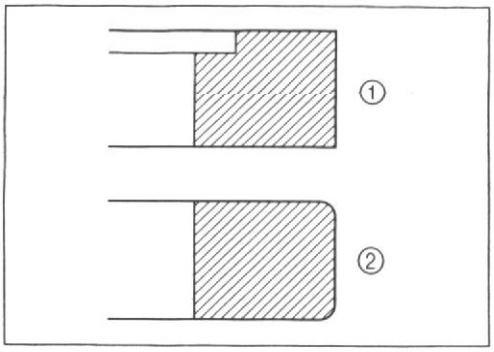


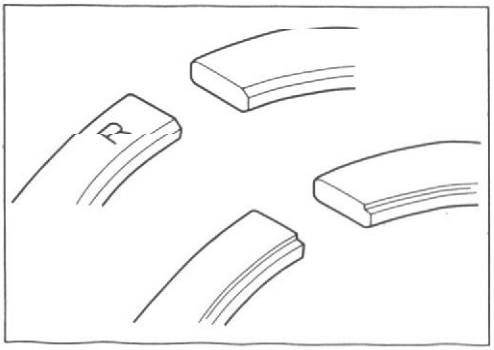
PISTON RING

- Install the oil ring first, the 2nd ring second, and the 1st ring last.

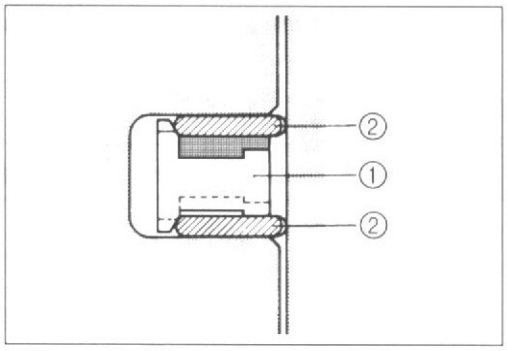
NOTE:

* *The 1st ① and 2nd ② piston rings differ in shape.*
* *The 1st piston ring should be installed with the grooved portion of the ring facing up.*
* *The 2nd piston ring should be installed with the mark facing up.*



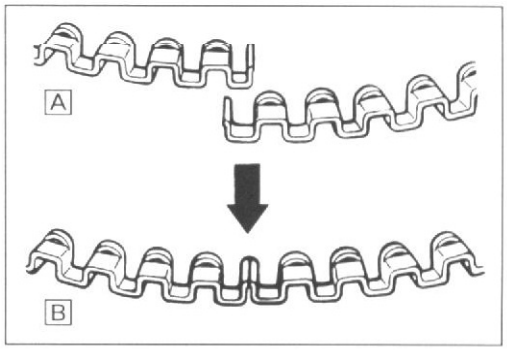


- First, install a spacer ① into the oil ring groove, and then install the two side rails ②. The spacer and side rails do not have a designated top and bottom. They can be installed in any position.



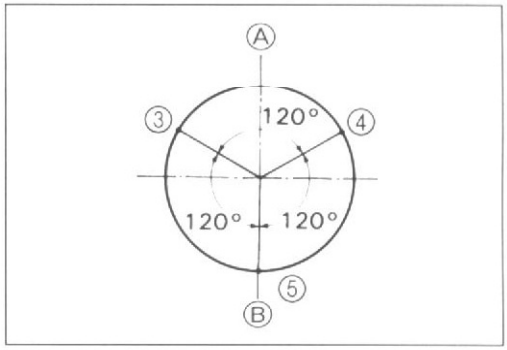
⚠ CAUTION

When installing the spacer, be careful not to allow its two ends to overlap in the groove.



A INCORRECT
B CORRECT

- Position the piston ring gaps as shown. Before inserting the piston into its cylinder, check that the gaps are properly positioned.



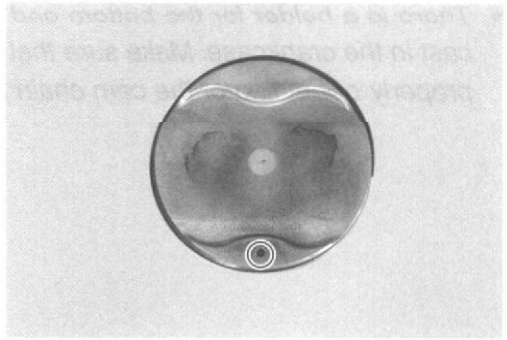
Ⓐ Exhaust side
Ⓑ Intake side

③ 2nd ring and lower side rail
④ Upper side rail
⑤ 1st ring and spacer

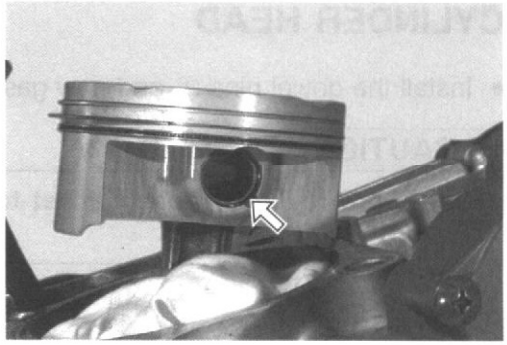
PISTON AND CYLINDER

Install the piston and cylinder in the reverse order of removal.

NOTE:
Install the piston with the punch mark on the piston head facing toward the exhaust side.



- Apply molybdenum oil solution onto the piston pin.
- Apply molybdenum oil solution to the small end of the conrod.
- Place a clean rag over the cylinder base to prevent the piston pin circlip from dropping into the crankcase, and then fit the piston pin circlip with long-nose pliers.



⚠ CAUTION

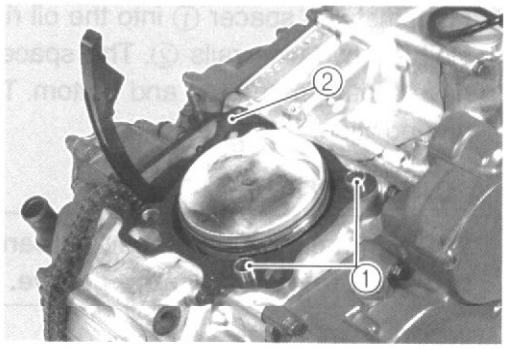
Use a new piston pin circlip to prevent circlip failure with a bent one.

- Apply engine oil to the sliding surface of the piston and big end of the conrod.

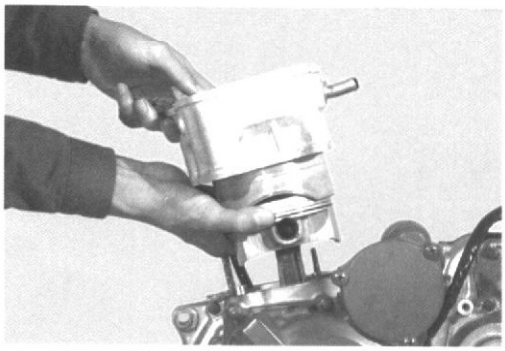
- Install the dowel pins ① and new gasket ② onto the crankcase.

⚠ CAUTION

Use a new gasket to prevent oil leakage.

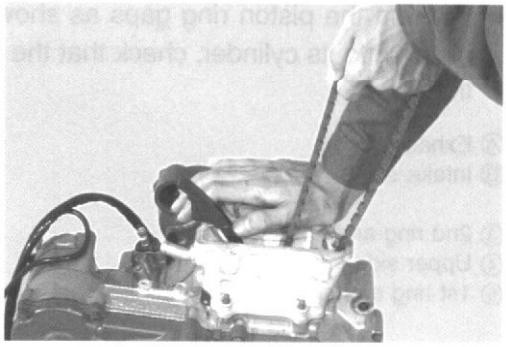


- Hold each piston ring with the piston ring sections positioned correctly and put it into the cylinder. Make sure that the piston rings are caught by the cylinder skirt.

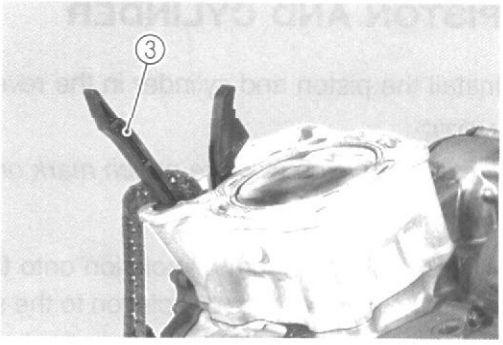


NOTE:

* *When mounting the cylinder, after attaching the camshaft drive chain, keep the camshaft drive chain taut. The camshaft drive chain must not be caught between the cam drive chain sprocket and crankcase when the crankshaft is rotated.*



* *There is a holder for the bottom end of the cam chain guide cast in the crankcase. Make sure that the guide ③ is inserted properly or binding of the cam chain and guide may result.*

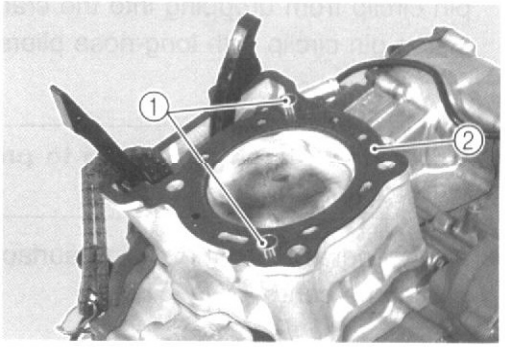


CYLINDER HEAD

- Install the dowel pins ① and new gasket ②.

⚠ CAUTION

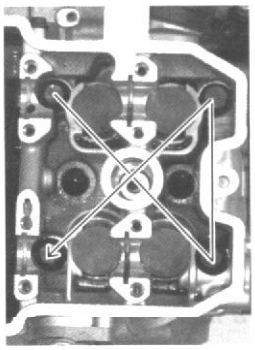
Use a new cylinder head gasket to prevent gas leakage.

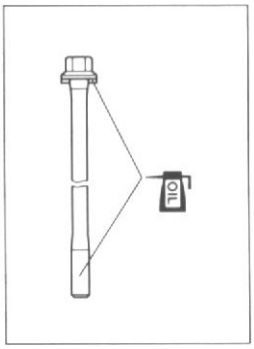


- With the head snugly seated on the cylinder, secure it by tightening the bolts in diagonal stages. Tighten the cylinder head bolts to the specified torque.

Cylinder head bolt

Initial: 25 N·m (2.5 kgf-m, 18.0 lb-ft)
Final: 46 N·m (4.6 kgf-m, 33.5 lb-ft)



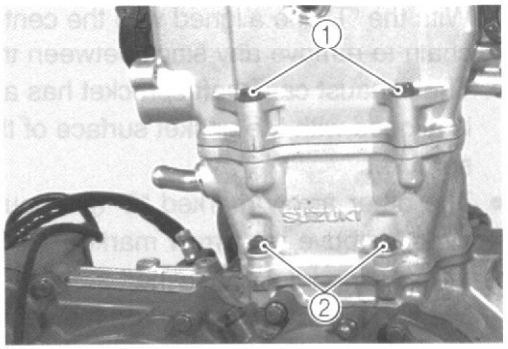


NOTE:

* *Apply engine oil to the threaded parts of the cylinder head bolts and its washers.*
* *Be sure to install the washer with rounded side facing up.*

- After tightening the cylinder head bolts to specification, tighten the cylinder head bolts ① and cylinder nuts ② to the specified torque.

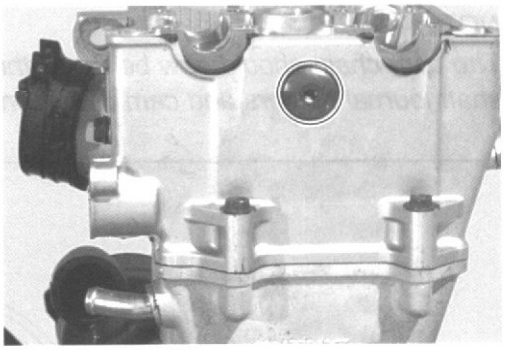
Cylinder head bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)
Cylinder nut: 10 N·m (1.0 kgf-m, 7.0 lb-ft)



- Tighten the cylinder head side bolt to the specified torque.

Cylinder head side bolt: 14 N·m (1.4 kgf-m, 10.0 lb-ft)

NOTE:
Be sure to install the gasket with the core bar facing toward the head of the bolt.

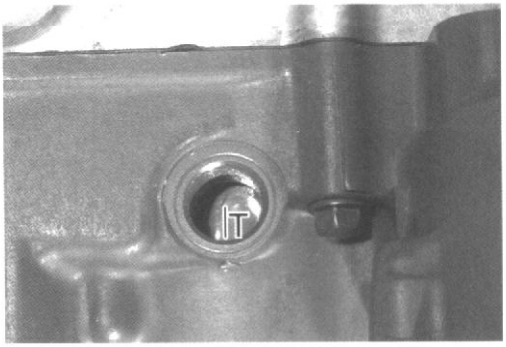


CAMSHAFT/AUTOMATIC DECOMPRESSION ASSEMBLY

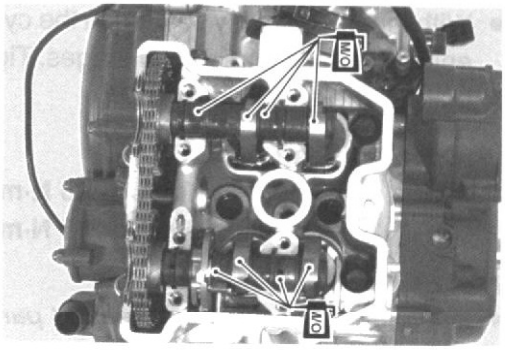
- Turn the generator rotor until the "I" line on the generator rotor is aligned with the center of the hole in the generator cover.

⚠ CAUTION

If the crankshaft is turned without drawing the cam chain upward, the cam chain will catch between crankcase and cam chain drive sprocket.



NOTE:
Just before installing the camshaft into the cylinder head, apply molybdenum oil solution to the camshaft journals and cam faces. Also, apply engine oil to the camshaft journal holders.

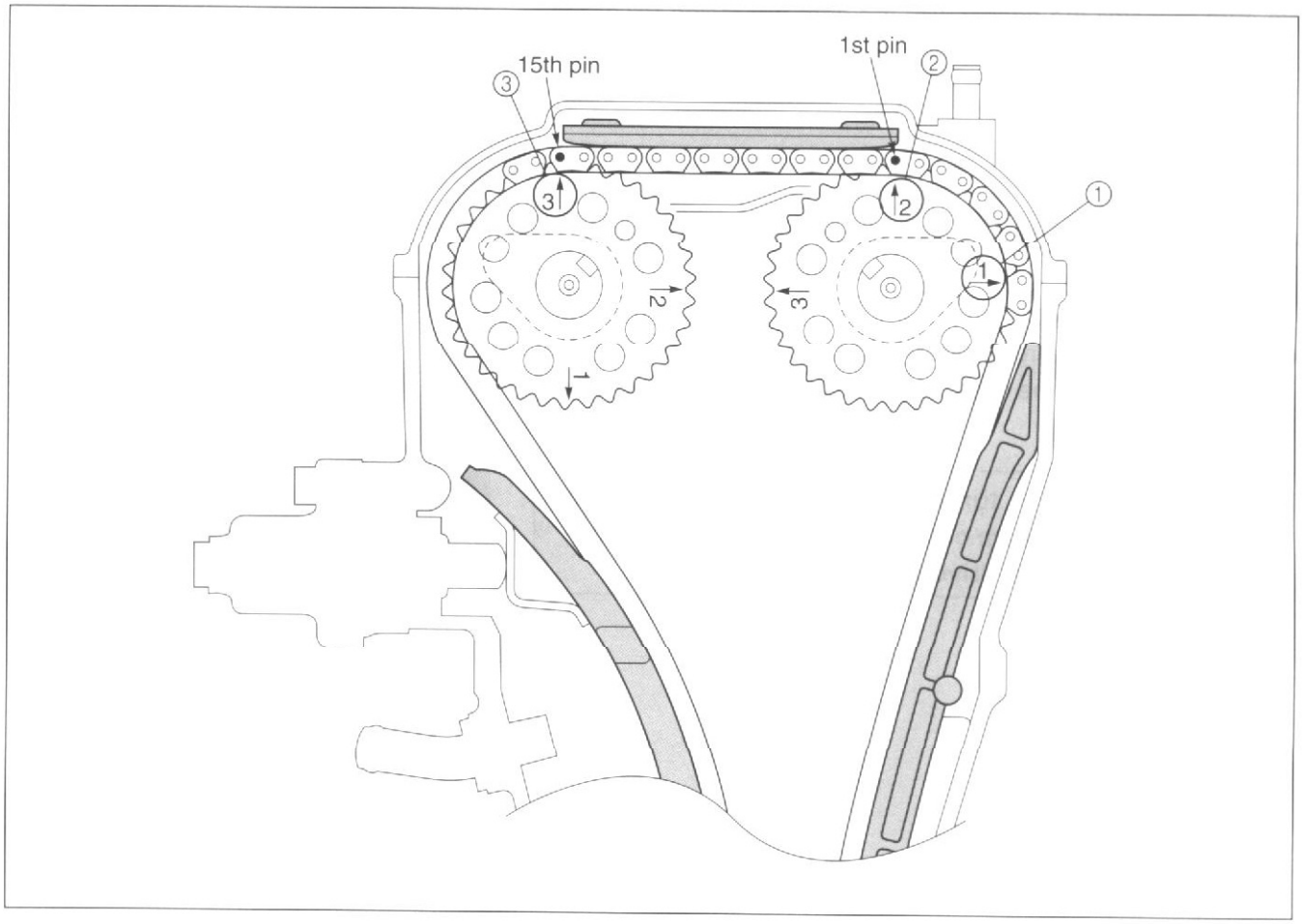


- Place each camshaft into the correct position.

NOTE:
Camshafts which are marked "EX" are for the exhaust side and those marked "IN" are for the intake side.

- With the "T" line aligned with the center of the hole, hold the camshaft steady and lightly pull up the cam chain to remove any slack between the cam chain drive sprocket and exhaust camshaft sprocket.
- The exhaust camshaft sprocket has an arrow marked "1" ①. Turn the exhaust camshaft so that the arrow is aligned with the gasket surface of the cylinder head. Engage the cam chain with the exhaust camshaft sprocket.
- The other arrow marked "2" ② should now be pointing straight up. Starting from the roller pin that is directly above the arrow marked "2" ②, count out 15 roller pins (from the exhaust camshaft side going towards the intake camshaft side).
  Engage the 15th roller pin on the cam chain with the arrow marked "3" ③ on the intake sprocket. Refer to the following illustrations.

NOTE:
The cam chain should now be on all three sprockets. Be careful not to move the crankshaft until the camshaft journal holders and cam chain tensioner are secured.

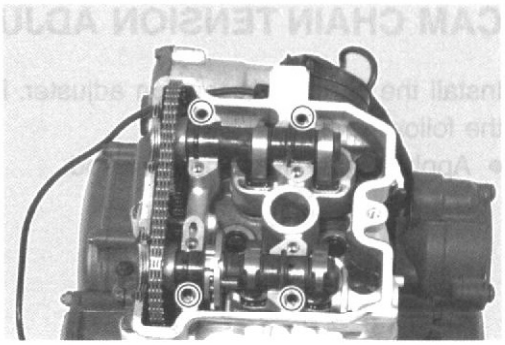


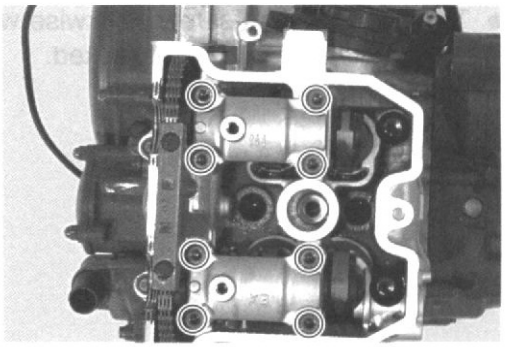
- Install the dowel pins.
- Place each camshaft journal holders and cam chain guide into the correct position.

NOTE:
Camshaft journal holders marked "EX" are for the exhaust side and those marked "IN" are for the intake side.

- Tighten the camshaft journal holder bolts to the specified torque.

Camshaft journal holder bolt:
10 N·m (1.0 kgf-m, 7.0 lb-ft)



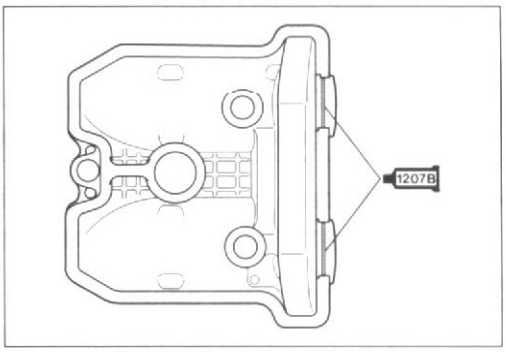


CYLINDER HEAD COVER

- Thoroughly wipe off oil from the fitting surfaces of the cylinder head and cover.
- Apply SUZUKI BOND "1207B" to the end caps of the cylinder head cover gasket as shown.

For USA
1207B 99104-31140: SUZUKI BOND "1207B"
For the other countries
1207B 99000-31140: SUZUKI BOND "1207B"

NOTE:
When tightening the cylinder head cover bolts, the piston position must be at TDC on the compression stroke.

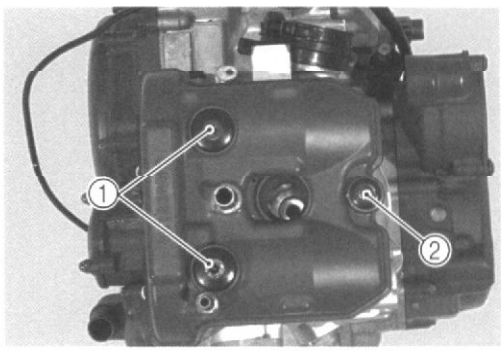


- Apply engine oil to both sides of the washer ①.
- Lightly tighten the cylinder head cover bolts in diagonal stages, and then tighten them to the specified torque.

Cylinder head cover bolt
Initial: 10 N·m (1.0 kgf-m, 7.0 lb-ft)
Final: 14 N·m (1.4 kgf-m, 10.0 lb-ft)

⚠ CAUTION

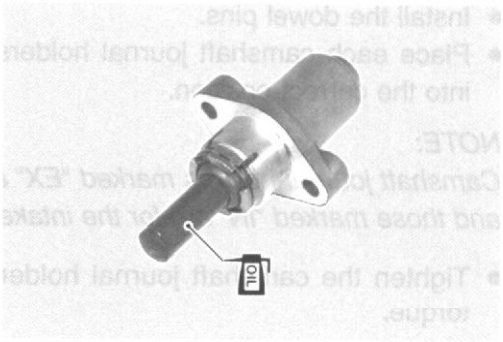
Use a new washers ① and cushion ②.



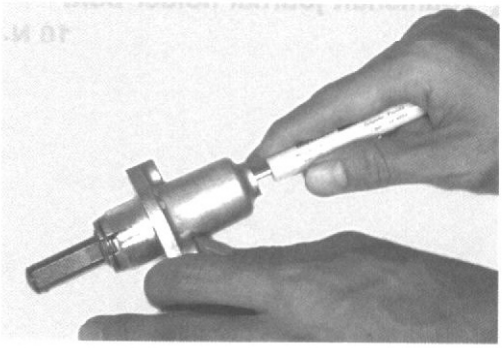
CAM CHAIN TENSION ADJUSTER

Install the cam chain tension adjuster. Pay special attention to the following points:

- Apply engine oil to the push rod.



- Turn the adjusting screw clockwise with a flat-bladed screwdriver until the push rod is locked.



- Fit a new gasket to the chain tension adjuster body.

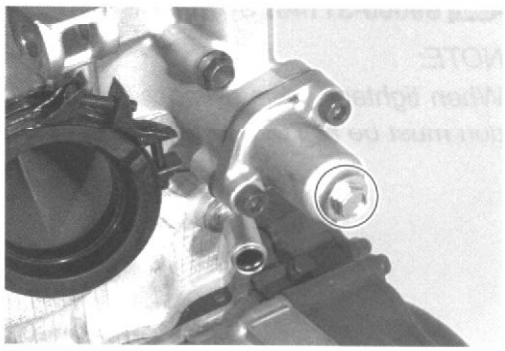
⚠ CAUTION

Use a new gasket to prevent oil leakage.

- Install the cam chain tension adjuster body to the cylinder, and then tighten the two Allen bolts to the specified torque.

Cam chain tension adjuster bolt:
10 N·m (1.0 kgf-m, 7.0 lb-ft)

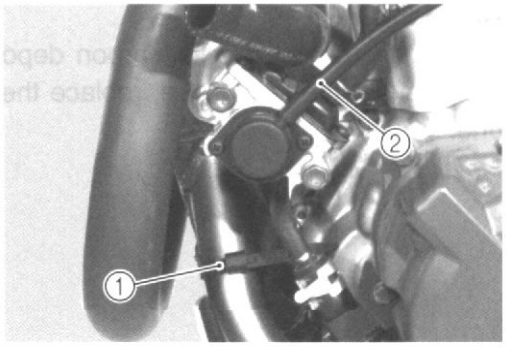
- Turn the adjusting screw counterclockwise with a flat-bladed screwdriver to unlock.
- Tighten the cam chain tensioner spring holder bolt to the specified torque.



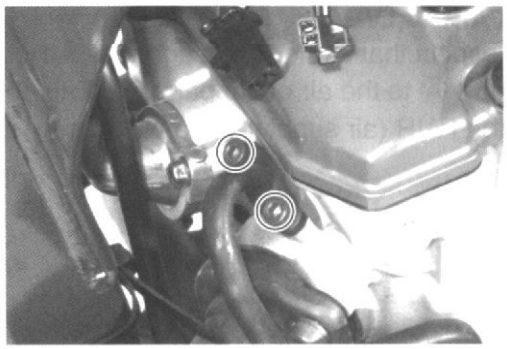
Cam chain tensioner spring holder bolt:
8 N·m (0.8 kgf-m, 6.0 lb-ft)

PAIR (AIR SUPPLY) SYSTEM (FOR E-02, 19, 54)

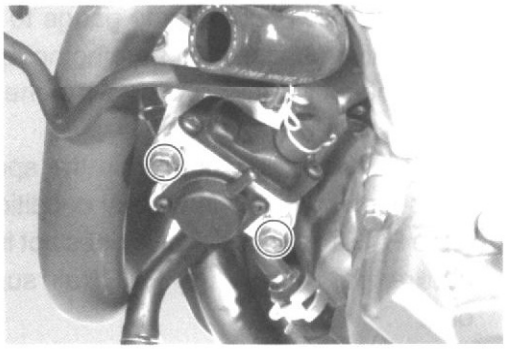
REMOVAL



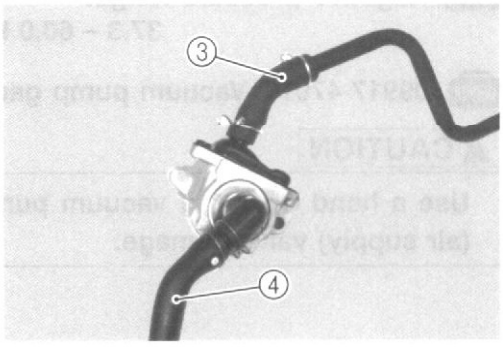
- Remove the left radiator. (☞ 5-6 and 5-7)
- Disconnect the clamp ① and vacuum hose ②.



- Remove the PAIR (air supply) pipe from the cylinder head.



- Remove the PAIR (air supply) valve assembly.

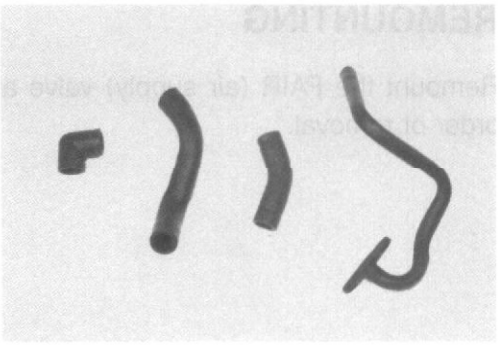


- Remove the PAIR (air supply) pipe ③ and air cleaner hose ④.

INSPECTION

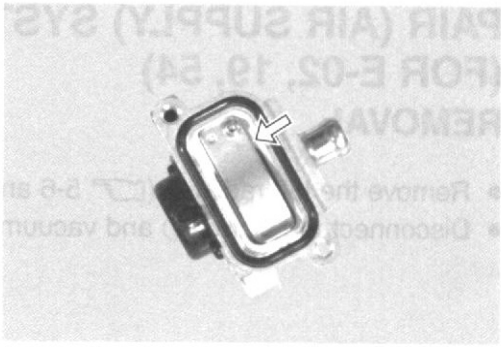
HOSE AND PIPE

Inspect each hose and pipe for wear or damage. If any damages are found, replace each hose and pipe with a new one.



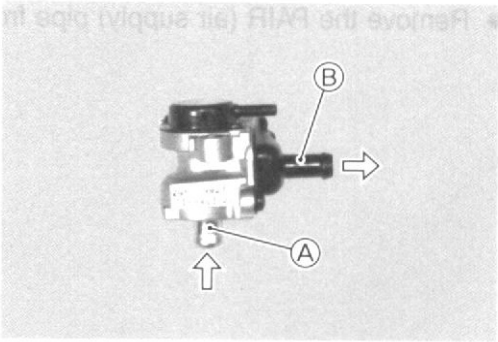
REED VALVE

Inspect the reed valve for carbon deposits. If carbon deposits are found in the reed valve, replace the reed valve with a new one.

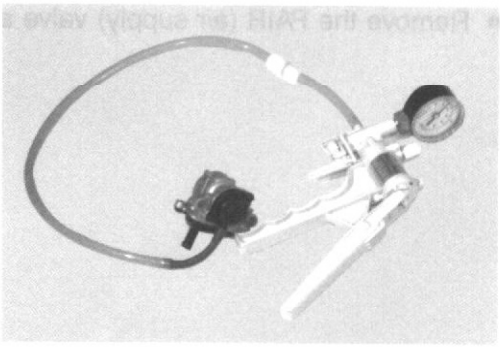


PAIR VALVE

Inspect that air flows through the PAIR (air supply) valve air inlet port Ⓐ to the air outlet parts Ⓑ. If air does not flow out, replace the PAIR (air supply) valve with a new one.

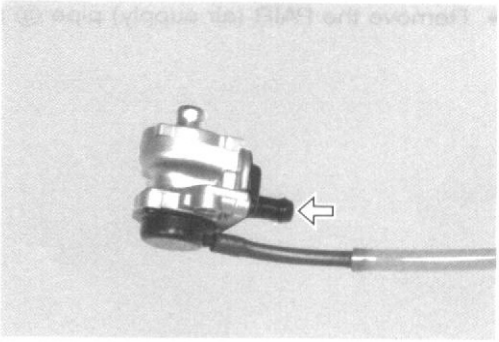


- Connect the vacuum pump gauge to the vacuum port of the PAIR valve as shown in the photograph.
- Apply negative pressure slowly to the PAIR (air supply) valve and inspect the air flow.
- If air does not flow out within the specified range, the PAIR (air supply) valve is in normal condition.
- If the PAIR (air supply) valve does not function within the specified range, replace the PAIR (air supply) valve with a new one.



DATA Negative pressure range:
37.3 – 60.0 kPa (280 – 450 mmHg)

TOOL 09917-47010: Vacuum pump gauge



⚠ CAUTION

Use a hand operated vacuum pump to prevent PAIR (air supply) valve damage.

REMOUNTING

Remount the PAIR (air supply) valve assembly in the reverse order of removal.

FUEL AND LUBRICATION SYSTEM

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FUEL TANK

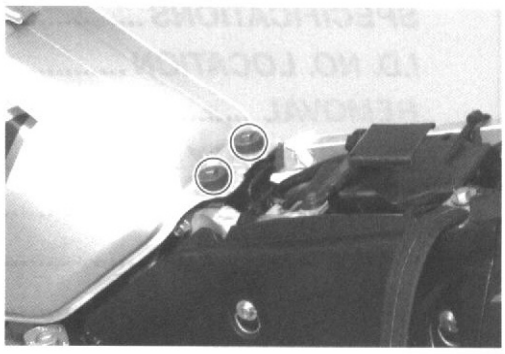
REMOVAL

- Remove the seat and side covers. (☞ 6-2)
- Turn the fuel valve to the "OFF" position.
- Disconnect the fuel hose.

⚠ WARNING

Gasoline is highly flammable and explosive.
Keep heat, sparks, and flames away from gasoline.

- Remove the fuel tank.

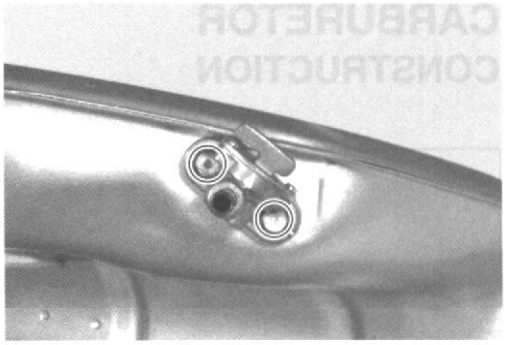


REMOUNTING

Remount the fuel tank in the reverse order of removal.

FUEL VALVE

REMOVAL AND INSPECTION



- Remove the fuel tank. (☞ 4-2)
- Drain the fuel completely.
- Remove the fuel valve.

⚠ WARNING

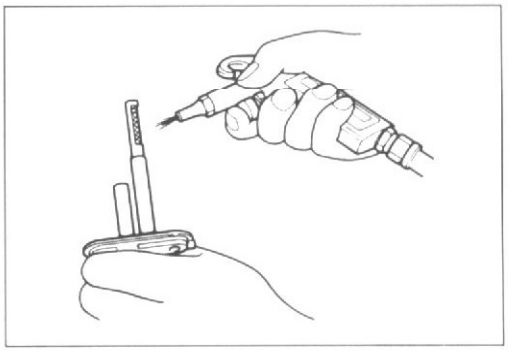
*** Gasoline is highly flammable and explosive. Keep heat, sparks, and flames away from gasoline.**
*** Replace the removed O-ring with a new one to prevent fuel leakage.**

- Tighten the fuel valve mounting bolts to the specified torque.

Fuel valve mounting bolt: 4.4 N·m (0.44 kgf-m, 3.2 lb-ft)

FUEL STRAINER

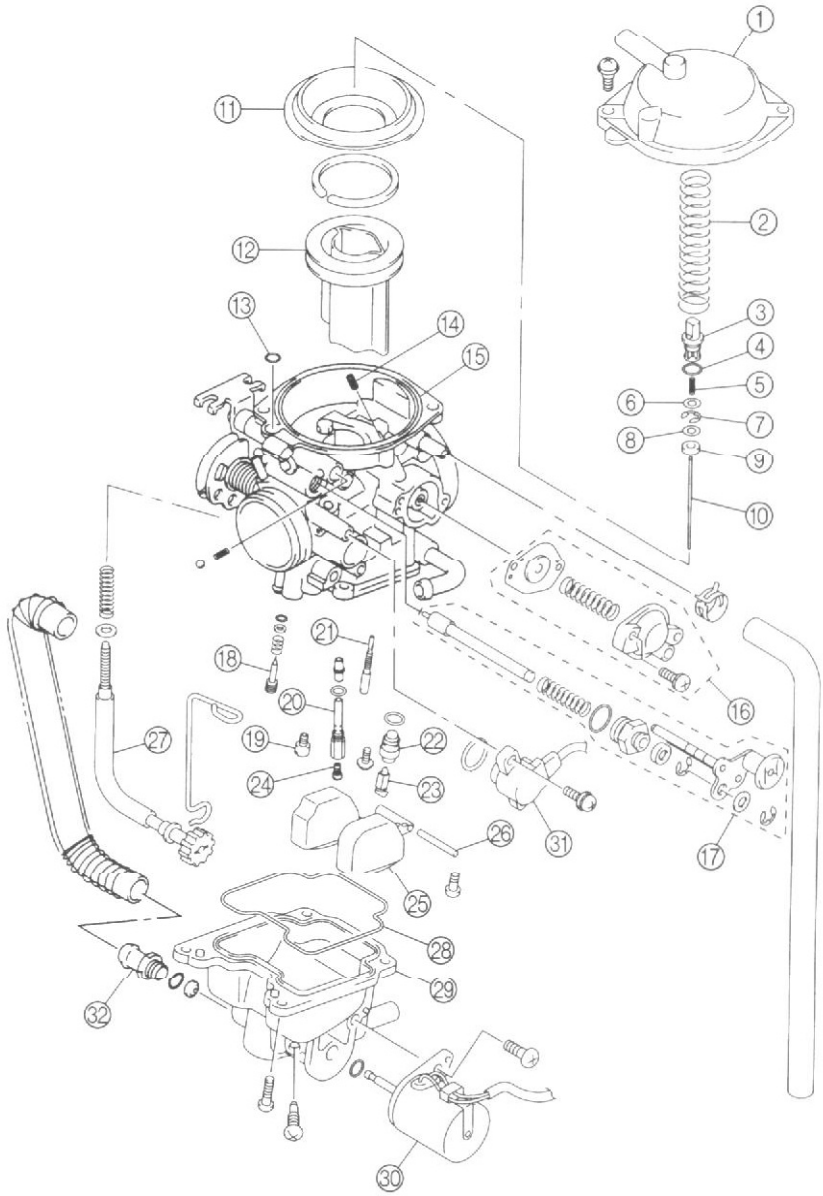
If the fuel strainer is dirty with sediment or rust, fuel will not flow smoothly and loss in engine power may result. Clean the fuel strainer with compressed air.



REMOUNTING

Remount the fuel valve in the reverse order of removal.

CARBURETOR
CONSTRUCTION



① Top cap
② Spring
③ Jet needle stopper
④ O-ring
⑤ Spring
⑥ Washer
⑦ E-ring
⑧ Washer
⑨ Spacer
⑩ Jet needle
⑪ Diaphragm
⑫ Piston valve
⑬ O-ring
⑭ Pilot air jet
⑮ Carburetor body
⑯ Coasting richer pump assembly
⑰ Starter plunger assembly
⑱ Pilot screw
⑲ Starter jet
⑳ Needle jet
㉑ Pilot jet
㉒ Valve seat
㉓ Needle valve
㉔ Main jet
㉕ Float
㉖ Float pin
㉗ Throttle stop screw
㉘ O-ring
㉙ Float chamber
㉚ Piston valve control solenoid (E-02, 19, 54)
㉛ Throttle position sensor
㉜ Joint pipe

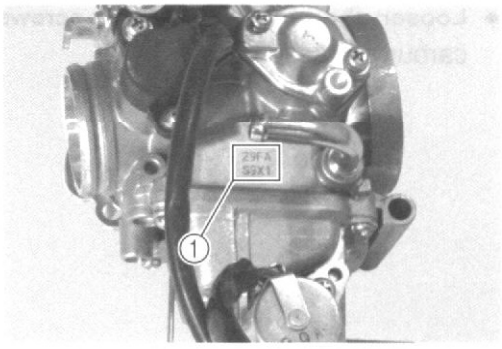
SPECIFICATIONS

ITEM		SPECIFICATION		
		E-02, 19, 54	E-03, 28	E-33
Carburetor type		MIKUNI BSR36	←	←
Bore size		36 mm (1.4 in)	←	←
I.D. No.		29FA	29FB	29FC
Idle r/min		1500 ± 100 r/min	←	←
Float height		13.0 ± 1.0 mm (0.51 ± 0.04 in)	←	←
Main jet	(M.J.)	#142.5	#142.5	←
Jet needle	(J.N.)	5DH36 2nd	5DH37	←
Needle jet	(N.J.)	P-0M	P-0M	←
Pilot jet	(P.J.)	#22.5	#22.5	←
Pilot air jet	(P.A.J.)	#165	#135	←
Pilot screw	(P.S.)	3 turns out	PRESET	←
Throttle cable play		2 – 4 mm (0.08 – 0.16 in)	←	←

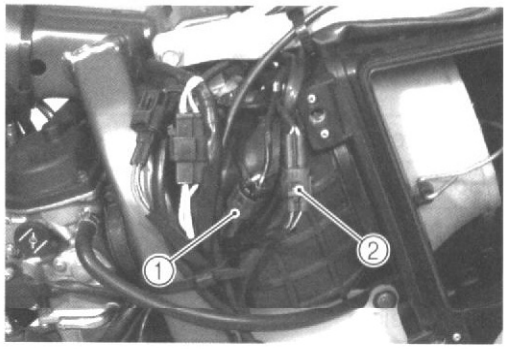
E-02: UK E-03: USA E-19: EU E-28: Canada E-33: California (USA) E-54: Israel

I.D. NO. LOCATION

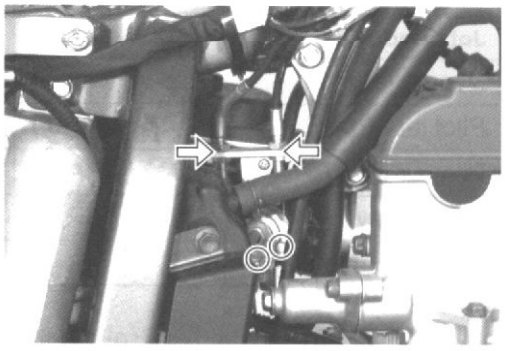
Carburetor has an I.D. number ① printed on its body.



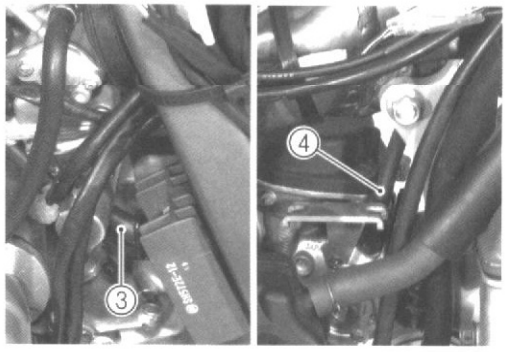
REMOVAL



- Remove the fuel tank. (☞ 4-2)
- Remove the left frame cover. (☞ 6-2)
- Disconnect the throttle position sensor coupler ① and piston valve control solenoid coupler ② (Except for E-03, 28, 33).



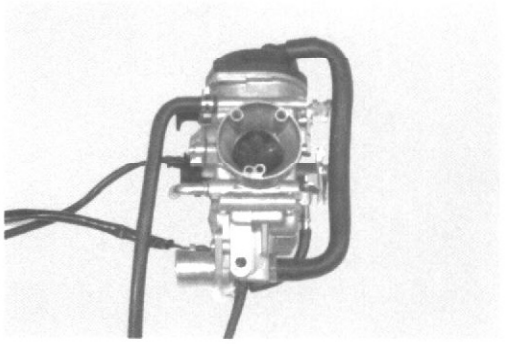
- Disconnect the throttle cables.



- Disconnect the air vent hose ③ and vacuum hose ④.

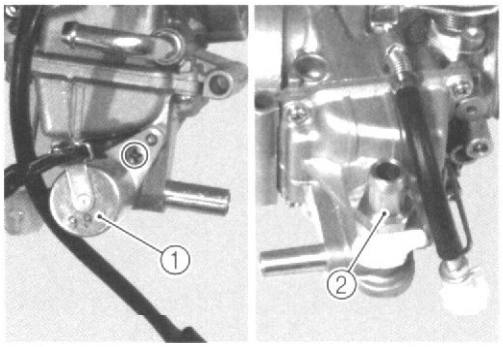
- Loosen the carburetor clamp screws, and then remove the carburetor assembly.

DISASSEMBLY

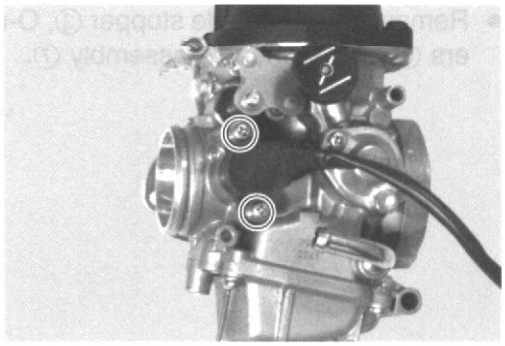


- Remove the carburetor hoses.

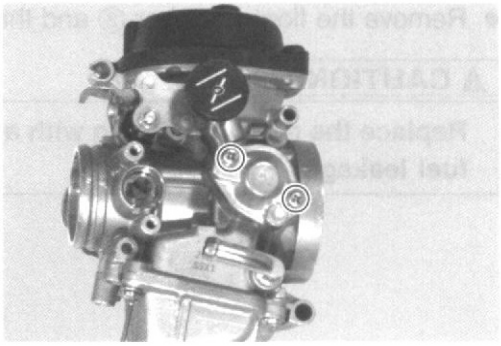
- Remove the piston valve control solenoid ① and joint pipe ② (Except for E-03, 28, 33).



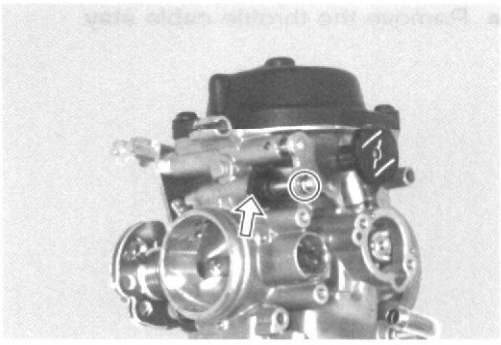
- Remove the throttle position sensor.



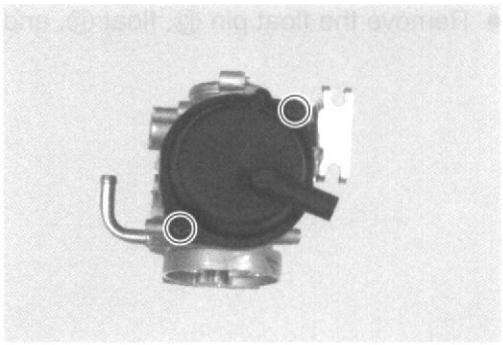
- Remove the coasting richer pump assembly.



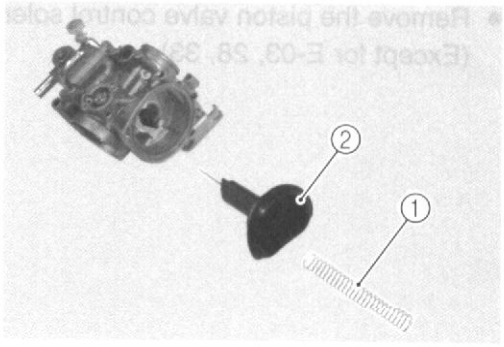
- Remove the starter plunger assembly



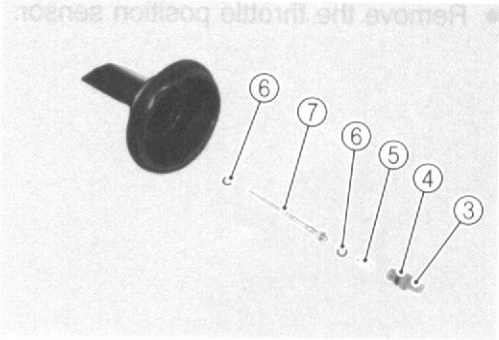
- Remove the top cap.



- Remove the spring ① and piston valve along with its diaphragm ②.



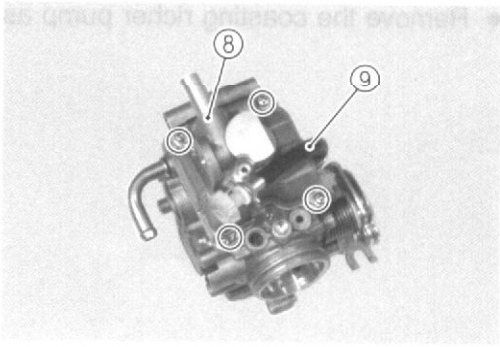
- Remove the jet needle stopper ③, O-ring ④, spring ⑤, washers ⑥, and jet needle assembly ⑦.



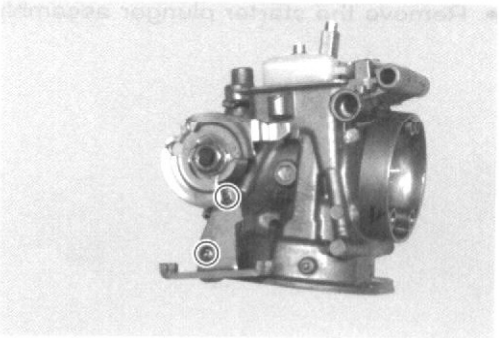
- Remove the float chamber ⑧ and throttle stop screw ⑨.

⚠ CAUTION

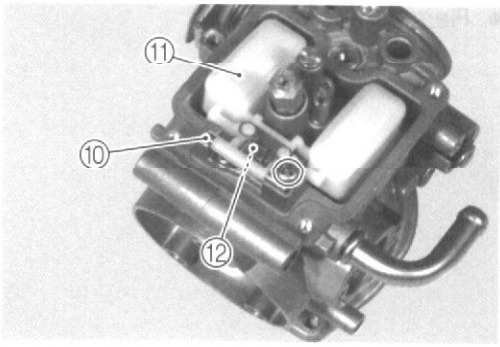
Replace the removed O-ring with a new one to prevent fuel leakage.



- Remove the throttle cable stay.

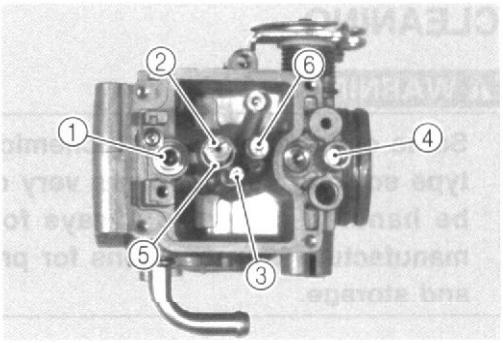


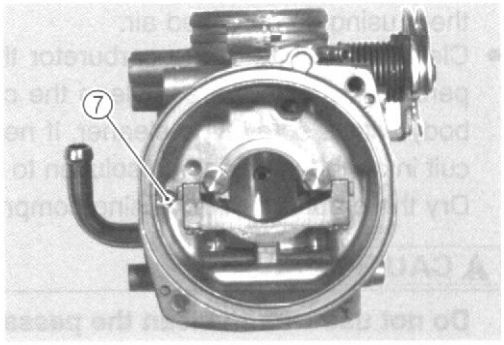
- Remove the float pin ⑩, float ⑪, and needle valve ⑫.



- Remove the following parts.

① Valve seat
② Main jet
③ Pilot jet
④ Pilot screw
⑤ Needle jet
⑥ Starter jet
⑦ Pilot air jet





NOTE:

Before removing the pilot screw ④, its setting must be determined. Slowly turn the pilot screw clockwise and count the number of turns until it is lightly seated. Make a note of how many turns were made.

When reassembling the pilot screw, you will want to set the pilot screw to its original position.

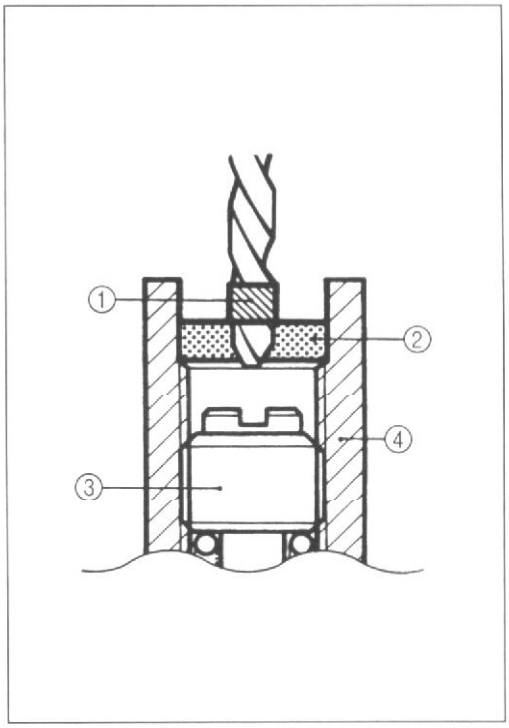
⚠ CAUTION

Do not use wire to clean the passageways, valve seat, and jets. Use compressed air only.

PILOT SCREW REMOVAL (FOR E-03, 28, 33)

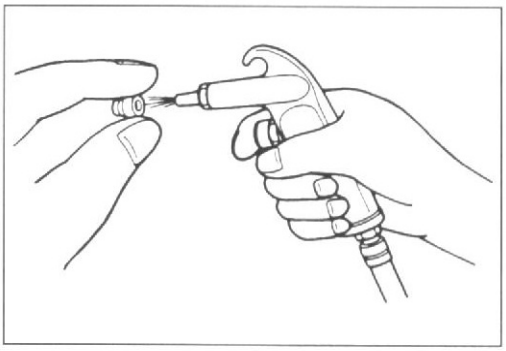
Because harsh cleaning solvents can damage the O-ring seals in the pilot system, the pilot system components should be removed before cleaning.

- Use a 1/8" size drill bit with a drill-stop to remove the pilot screw plug. Set the drill-stop 6 mm from the end of the bit to prevent drilling into the pilot screw. Carefully drill through the plug.
- Thread a self-tapping sheet metal screw into the plug. Pull on the screw head with pliers to remove the plug. Carefully clean any metal shavings from the area.
- Slowly turn the pilot screw clockwise and count the number of turns until the screw is lightly seated. Make a note of how many turns were made so the screw can be reset correctly after cleaning.
- Remove the pilot screw along with the spring, washer, and O-ring.
- After cleaning, install the pilot screw to the original setting by turning the screw in until it lightly seats, and then backing it out the same number of turns counted during disassembly.
- Install a new plug by tapping it into place with a punch.



① Drill-stop
② Plug
③ Pilot screw
④ Carburetor body

CLEANING



⚠ WARNING

Some carburetor cleaning chemicals, especially dip-type soaking solutions, are very corrosive and must be handled carefully. Always follow the chemical manufacturer's instructions for proper use, handling and storage.

- Clean all jets with a spray-type carburetor cleaner and dry them using compressed air.
- Clean all circuits of the carburetor thoroughly—not just the perceived problem area. Clean the circuits in the carburetor body with a spray-type cleaner. If necessary, soak each circuit in a dip-type cleaning solution to loosen dirt and varnish. Dry the carburetor body using compressed air.

⚠ CAUTION

Do not use wire to clean the passageways, valve seat, and jets. If the components cannot be cleaned with a spray-type cleaner it may be necessary to soak them in a dip-type cleaning solution. Always follow the chemical manufacturer's instructions for proper use and cleaning of the carburetor components.

- After cleaning, reassemble the carburetor with new O-rings.

⚠ CAUTION

Replace the removed O-rings with new ones.

INSPECTION

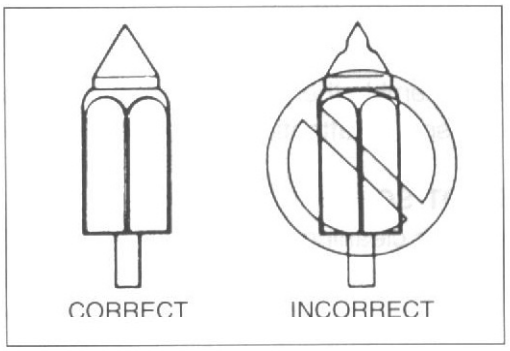
Check the following items for any damage or clogging. If any damages are found, replace the damaged parts with new ones.

* Pilot jet
* Main jet
* Main air jet
* Pilot air jet
* Needle jet air bleeding hol
* Float
* Needle valve
* Pilot outlet and bypass ports
* Valve seat
* Jet needle
* Piston valve
* Starter (enricher) jet
* O-ring
* Throttle valve
* Diaphragm

NEEDLE VALVE INSPECTION

If foreign matter is caught between the valve seat and the needle valve, the gasoline will continue flowing and overflow. If the valve seat and needle valve are worn beyond the permissible limits, similar trouble will occur. Conversely, if the needle valve sticks, the gasoline will not flow into the float chamber.

Clean the float chamber and float parts with gasoline. If the needle valve is worn as shown, replace it and the valve seat a new one. Clean the fuel passage of the mixing chamber using compressed air.



FLOAT HEIGHT ADJUSTMENT

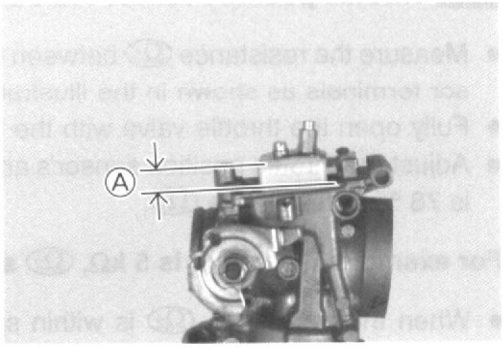
To check the float height, turn the carburetor upside down.

Measure the float height Ⓐ while the float arm is just contacting the needle valve using vernier calipers.

Bend the tongue as necessary to bring the float height Ⓐ to the specified level.

TOOL 09900-20101: Vernier calipers

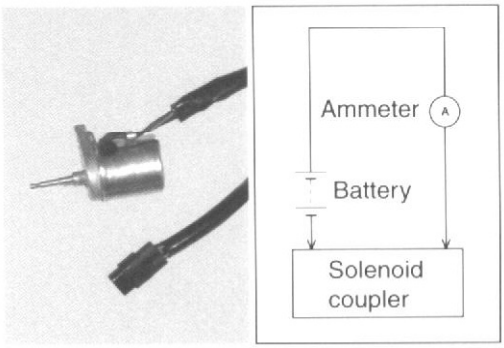
DATA Float height Ⓐ: 13.0 ± 1.0 mm (0.51 ± 0.04 in)



PISTON VALVE CONTROL SOLENOID INSPECTION (FOR E-02, 19, 54)

Test the piston valve control solenoid for load current using an ammeter.

To test the piston valve control solenoid, connect a 12 V battery to the solenoid coupler. If the needle valve of the piston valve control solenoid does not move, replace the piston valve control solenoid with a new one.



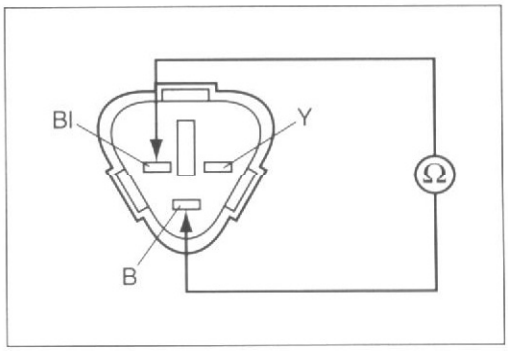
THROTTLE POSITION SENSOR INSPECTION

Measure the resistance between the terminals as shown in the illustration.

DATA Throttle position sensor resistance: 3.5 – 6.5 kΩ

NOTE:

When performing this test, it is not necessary to remove the throttle position sensor.

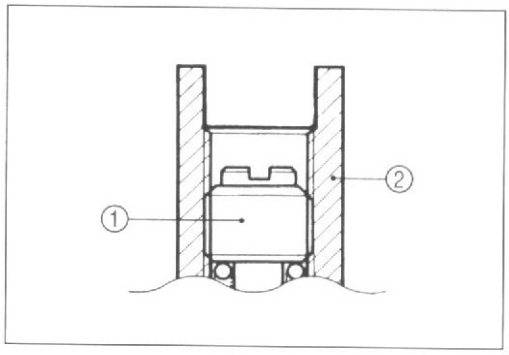


REASSEMBLY

Reassemble the carburetor in the reverse order of disassembly. Pay special attention to the following points:

PILOT SCREW

- After cleaning, install the pilot screw ① to the original setting by turning the screw in until it lightly seats, and then backing it out the same number of turns counted during disassembly.



① Pilot screw
② Carburetor body

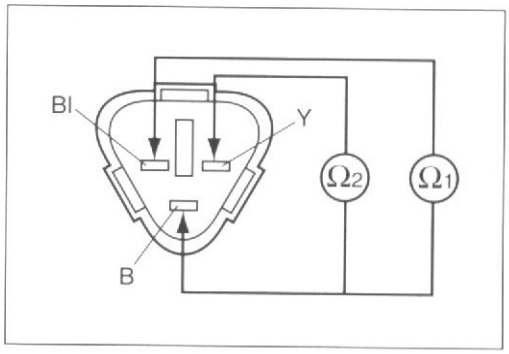
⚠ CAUTION

Replace the removed O-ring with a new one.

THROTTLE POSITION SENSOR INSTALLATION

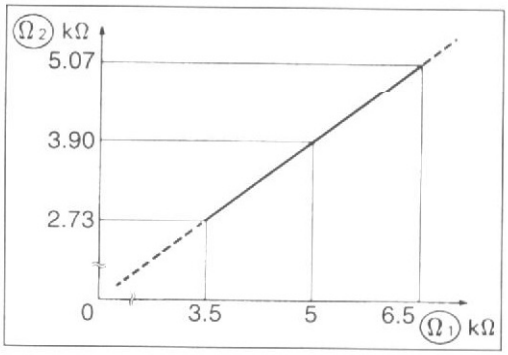
Install the throttle position sensor as described below.

- Measure the resistance (Ω1) between the throttle position sensor terminals as shown in the illustration.



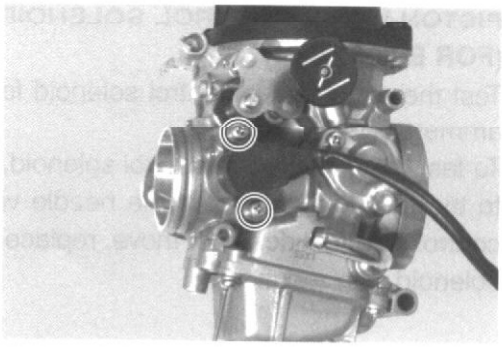
DATA Throttle position sensor resistance (Ω1): 3.5 – 6.5 kΩ

- Measure the resistance (Ω2) between the throttle position sensor terminals as shown in the illustration.
- Fully open the throttle valve with the throttle lever.
- Adjust the throttle position sensor's angle until resistance (Ω2) is 78 % of resistance (Ω1).



For example: When (Ω1) is 5 kΩ, (Ω2) should be 3.9 kΩ.

- When the resistance (Ω2) is within specification, tighten the throttle position sensor mounting screws.



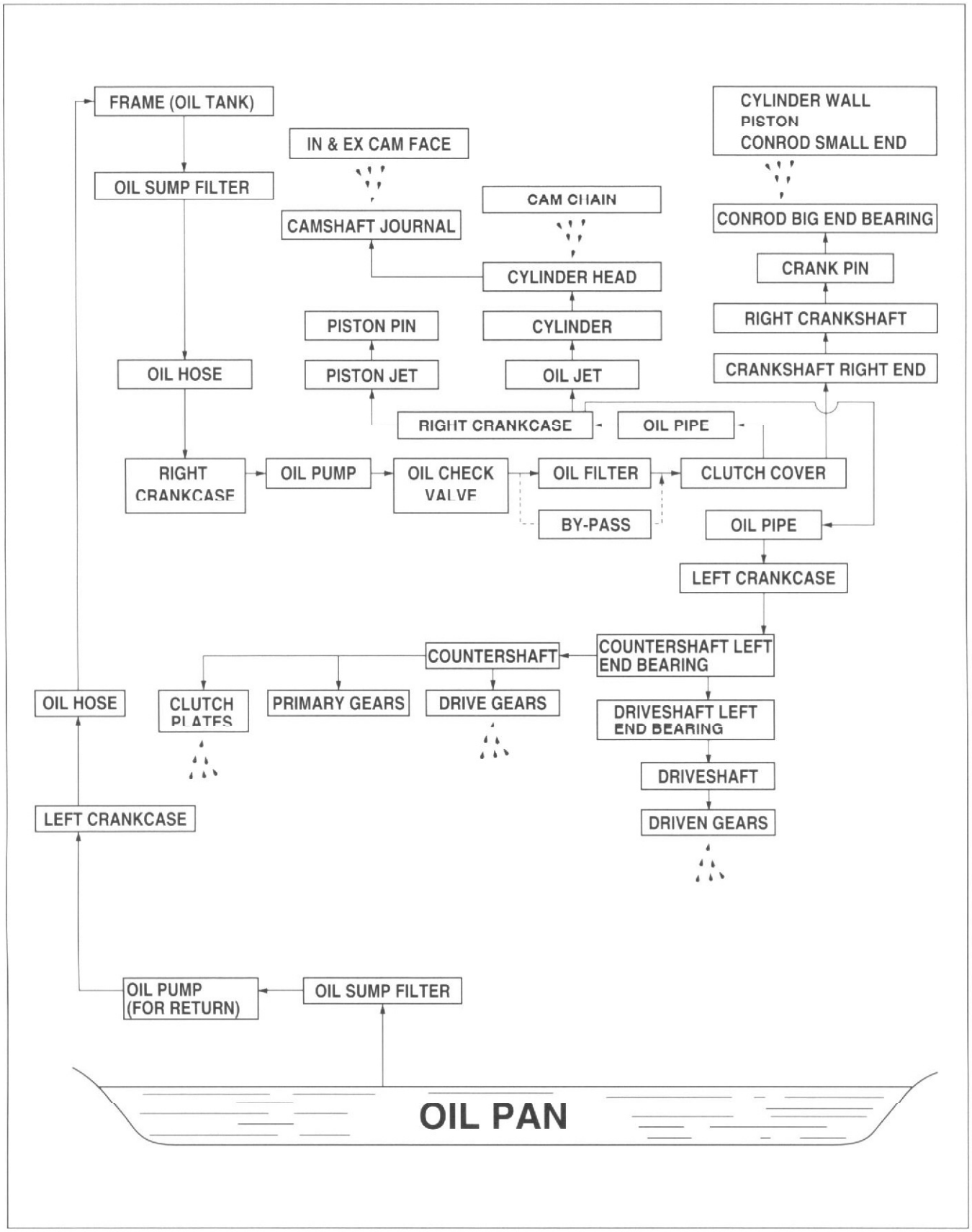
REMOUNTING

Remount the carburetor assembly in the reverse order of removal. After the carburetor assembly has been remounted onto the engine perform the following adjustments:

* **Throttle cable play** ..... ☞ 2-13
* **Engine idle speed** ..... ☞ 2-14

LUBRICATION SYSTEM

ENGINE LUBRICATION SYSTEM CHART



COOLING SYSTEM

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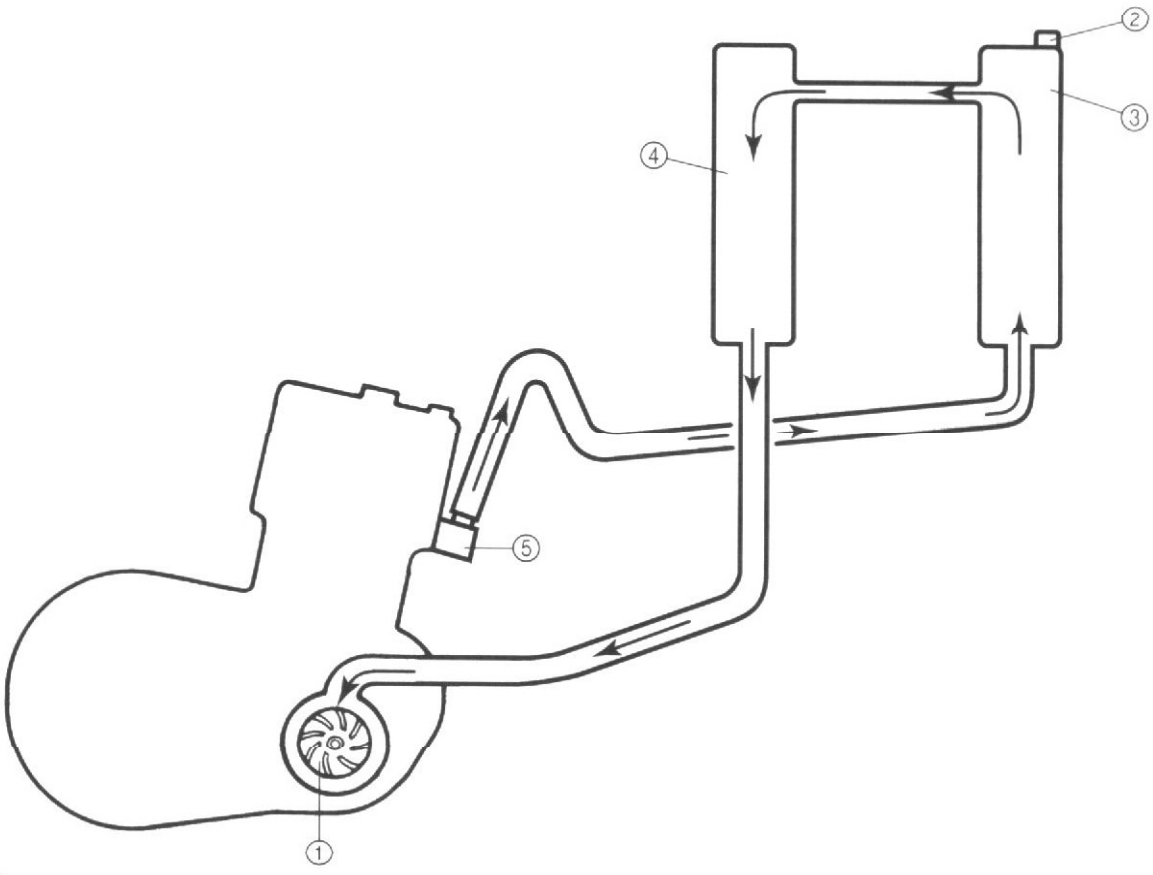
COOLING SYSTEM
DESCRIPTION

The engine is cooled by the forced circulation of engine coolant, using a high-capacity, centrifugal water pump, through water jackets formed in the cylinder and cylinder head, and through the radiator. The tube-and-fin type radiator is made of aluminum, which is characterized by lightness in weight and good heat dissipation.

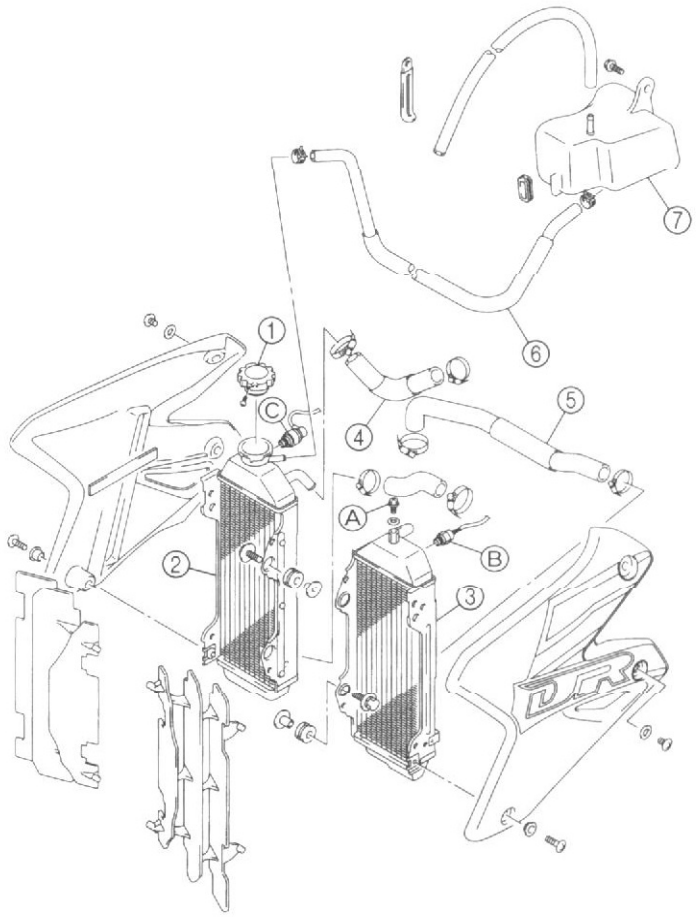
A wax-pellet type thermostat is used to regulate the flow of engine coolant through the radiator. As the coolant temperature rises to about 75°C (167°F) the thermostat valve unseats and a normal coolant flow is established. At about 90°C (194°F) the thermostat becomes completely open and, as a result, heat is released to the atmosphere through the radiator core.

Referring to the following illustration, the thermostat is in the closed condition, so that engine coolant recirculates through the route comprising the water pump, engine, by-pass hole of the thermostat and radiator in the regulated condition.



① Impeller
② Radiator cap
③ Right radiator
④ Left radiator
⑤ Thermostat

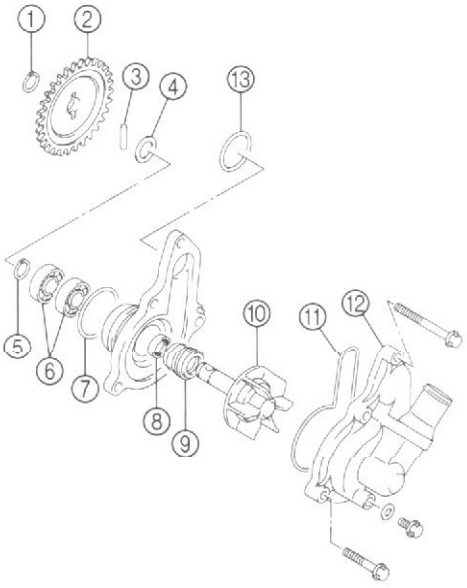
CONSTRUCTION



① Radiator cap
② Radiator (R)
③ Radiator (L)
④ Radiator inlet hose
⑤ Radiator outlet hose
⑥ Overflow hose
⑦ Overflow tank

Ⓐ Air bleeder bolt
Ⓑ Cooling fan thermoswitch
Ⓒ Engine coolant temperature thermoswitch

ITEM	N·m	kgf-m	lb-ft
Ⓐ	5.5	0.55	4.0
Ⓑ	13	1.3	9.5
Ⓒ	13	1.3	9.5



① Circlip
② Water pump driven gear
③ Pin
④ Washer
⑤ Circlip
⑥ Bearing
⑦ O-ring
⑧ Oil seal
⑨ Mechanical seal
⑩ Impeller
⑪ O-ring
⑫ Water pump cover
⑬ O-ring

ENGINE COOLANT

At the time of manufacture, the cooling system is filled with a 50:50 mixture of distilled water and ethylene glycol antifreeze. This mixture will provide optimum corrosion and heat protection, and will protect the cooling system from freezing at above –31°C (–24°F).

If the motorcycle is to be exposed to temperatures below –31°C (–24°F), the percentage of antifreeze should be increased to 55% or 60%, according to figure 2.

- The characteristics of different antifreeze vary; therefore, be sure to use the specified antifreeze.

DATA Engine coolant: Mix antifreeze designed for aluminum radiators with distilled water only.

Water/antifreeze mixture ratio: 50:50 – 40:60

⚠ CAUTION

*** Mix a high quality ethylene glycol based antifreeze with distilled water only. Do not mix an alcohol based antifreeze or different brands of antifreeze.**

*** The percentage of antifreeze in the coolant should be between 50 to 60%. If the percentage of antifreeze is above or below this range the coolant's frost protection and rust-inhibiting capabilities will be reduced. Always keep the antifreeze content above 50% even if the atmospheric temperature does not go below the freezing point.**

DATA Engine coolant capacity: 1 250 ml (1.3 US qt, 1.1 Imp qt)

Antifreeze density	Freezing point
50%	–31°C (–24°F)
55%	–40°C (–40°F)
60%	–55°C (–67°F)

⚠ WARNING

*** Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.**

*** The engine must be cool before servicing the cooling system.**

*** Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.**

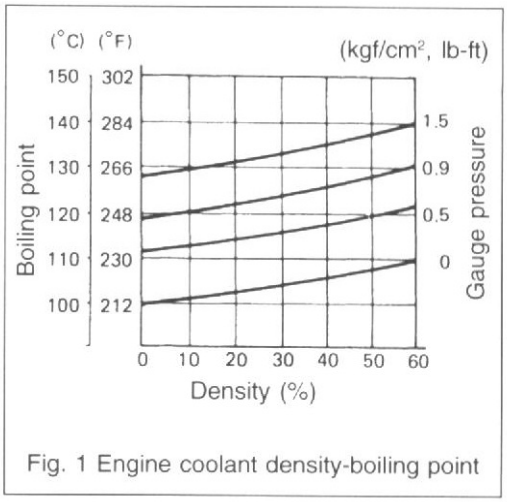


Fig. 1 Engine coolant density-boiling point

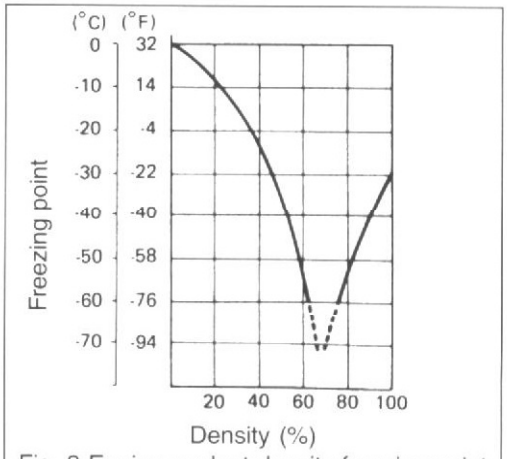


Fig. 2 Engine coolant density-freezing point

RADIATOR AND COOLING FAN

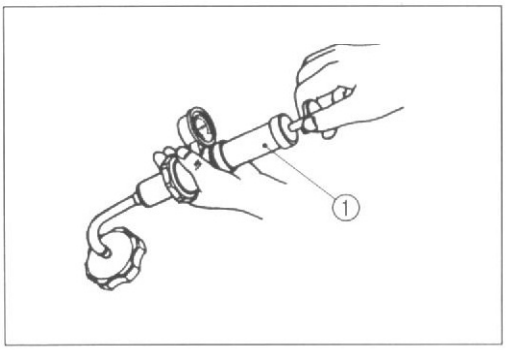
INSPECTION

RADIATOR

Before removing the radiator and draining the engine coolant, check the following.

Check the cooling system for leaks with a radiator tester ①.

Remove the radiator cap and connect the radiator tester to the filler. Pressurize the cooling system with 120 kPa (1.2 kgf/cm², 17 psi) of pressure, and then check if it holds the pressure for 10 seconds. If the cooling system does not hold the pressure for at least 10 seconds, check the entire cooling system for leaks. If a leak is found, replace the damaged part.



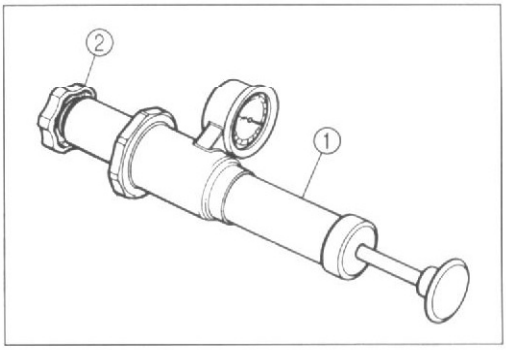
⚠ WARNING

*** Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.**

*** When removing the radiator cap tester, put a rag on the filler to prevent the engine coolant from spraying out.**

⚠ CAUTION

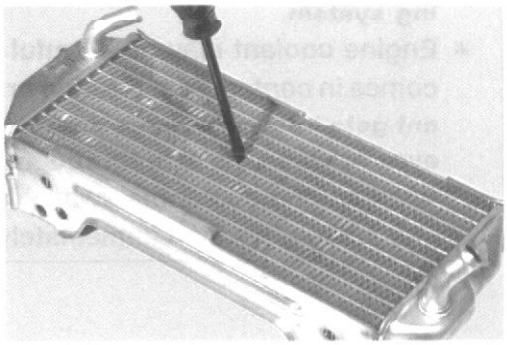
Do not exceed the radiator cap release pressure, or the radiator cap and subsequently the radiator, can be damaged.



Check the radiator cap ② using a radiator tester ①.

Attach the radiator cap to the radiator tester as shown. Slowly apply pressure to the radiator cap; do not exceed 95 – 125 kPa (0.95 – 1.25 kgf/cm², 13.5 – 17.8 psi). If the radiator cap does not hold the pressure for at least 10 seconds, replace it with a new one.

DATA Radiator cap release pressure: 95 – 125 kPa (0.95 – 1.25 kgf/cm², 13.5 – 17.8 psi)



Check the radiator for dirt and other foreign materials. If any are found, clean the radiator using compressed air. Also, repair any bent or dented fins using a small screwdriver.

Check all the water hoses for cracks, flat spots, or loose connections. Replace any damaged hoses and properly tighten any loose connections.

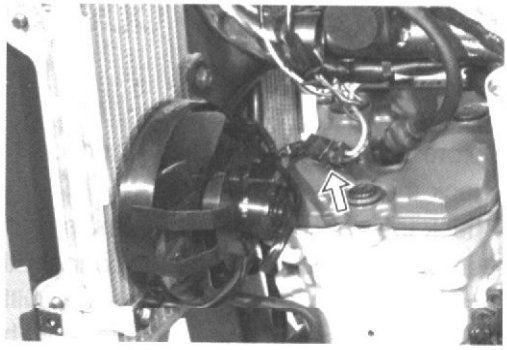
COOLING FAN

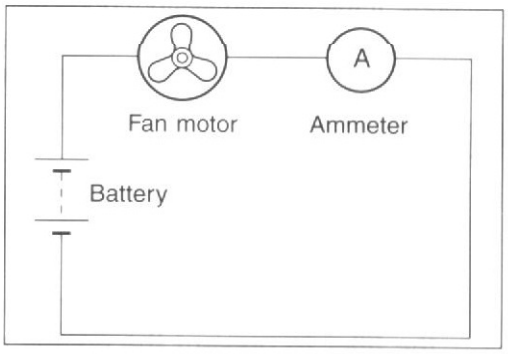
- Remove the fuel tank. (☞ 4-2)
- Disconnect the cooling fan motor coupler.

Test the cooling fan motor for load current using an ammeter connected as shown.

The voltmeter is for making sure that the battery applies 12 volts to the motor. With the motor with electric motor fan running at full speed, the ammeter should be indicating not more than 5 amperes.

If the fan motor does not turn, replace the motor assembly with a new one.





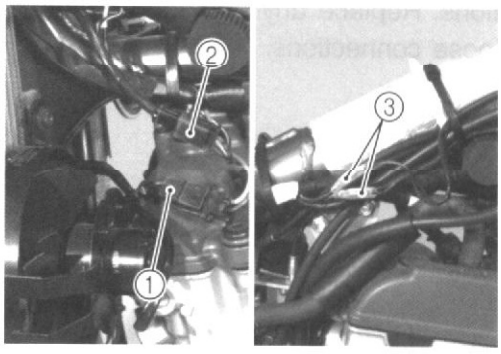
REMOVAL

- Remove the fuel tank. (☞ 4-2)
- Drain the engine coolant. (☞ 2-15)

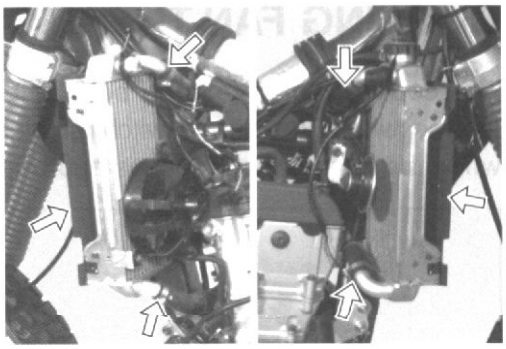
⚠ WARNING

*** Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.**
*** The engine must be cool before servicing the cooling system.**
*** Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.**

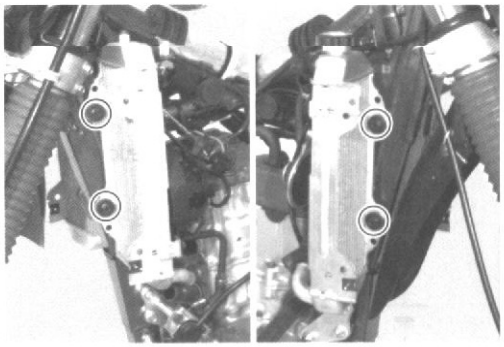
- Disconnect the cooling fan motor coupler ①, cooling fan thermoswitch coupler ②, and engine coolant temperature thermoswitch lead wires ③.



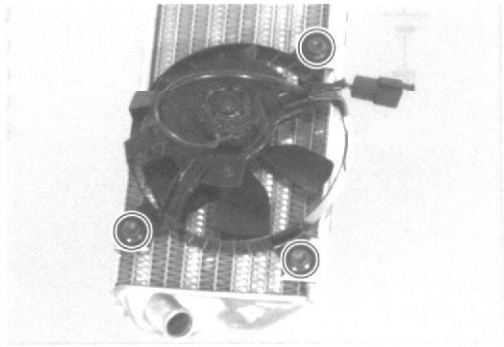
- Disconnect the radiator hoses and radiator covers.



- Remove the radiators.



- Remove the cooling fan.

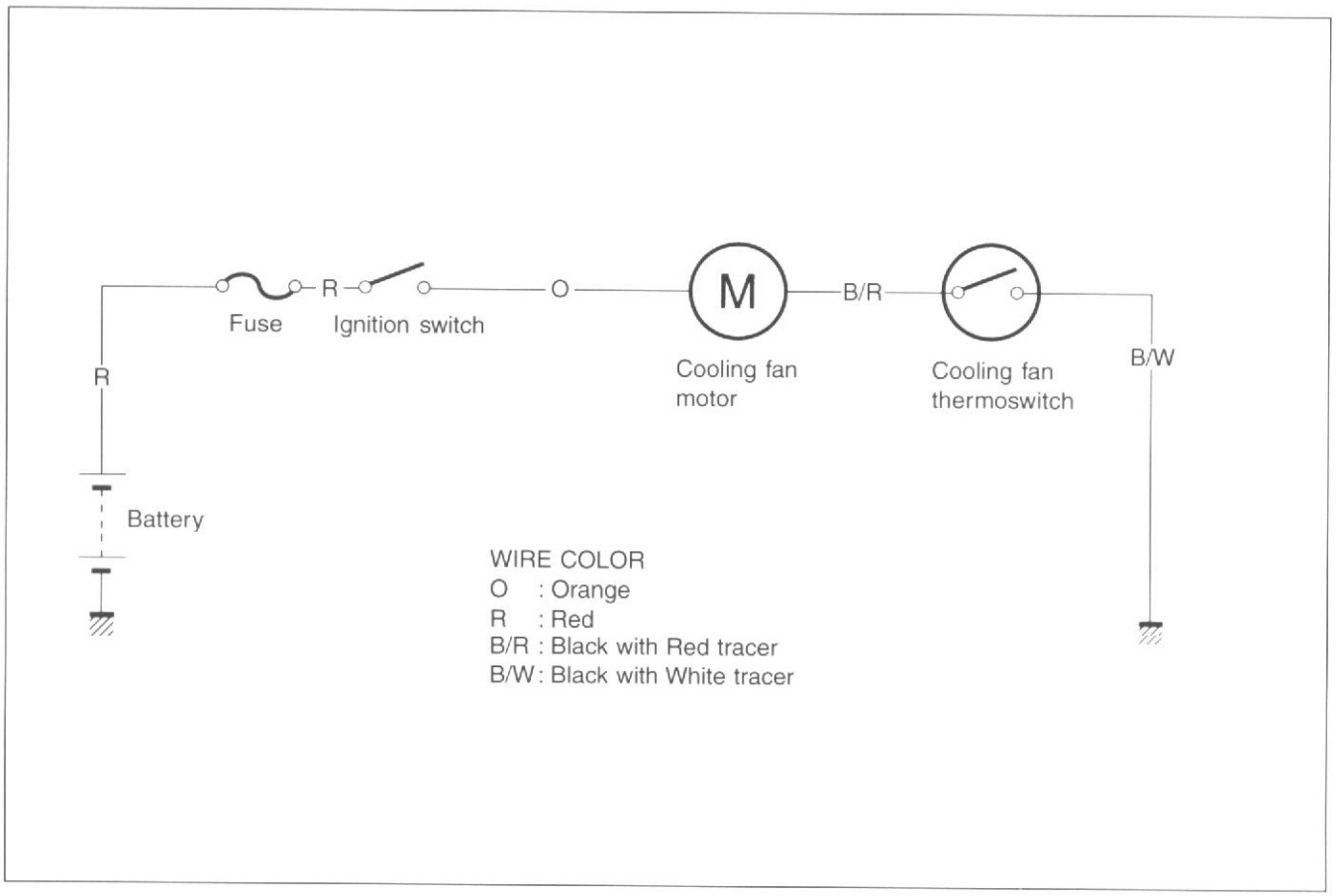


REMOUNTING

Remount the radiator in the reverse order of removal. After remounting the radiator, be sure to add engine coolant. (☞ 2-15)

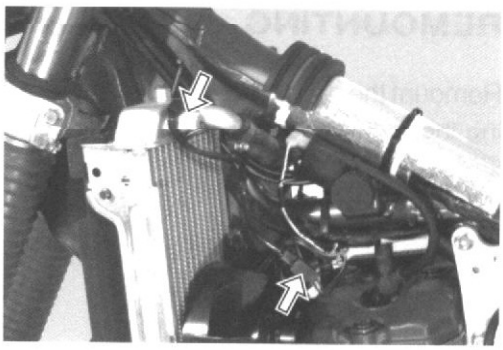
COOLING FAN THERMOSWITCH

The cooling fan is secured behind the radiator by three bolts and is automatically controlled by the thermoswitch. The thermoswitch remains open when the temperature of the engine coolant is low, but closes when the temperature reaches approximately 96°C (205°F) setting the cooling fan in motion.

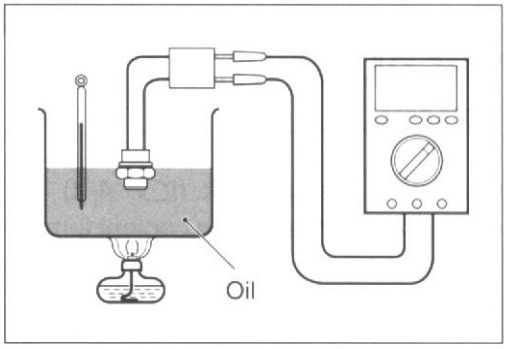


REMOVAL

- Remove the fuel tank. (☞ 4-2)
- Disconnect the cooling fan thermoswitch coupler and remove the cooling fan thermoswitch.



INSPECTION



Check the operating temperature of the cooling fan thermoswitch.

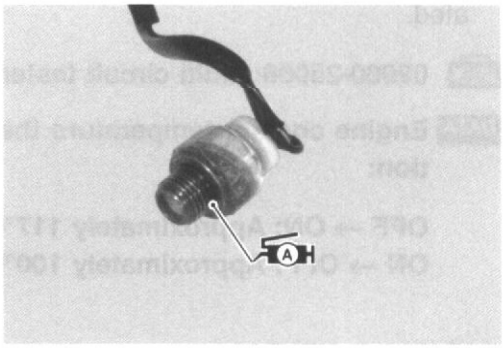
- Connect the multi circuit tester to the cooling fan thermoswitch.
- Place the cooling fan thermoswitch into a container of oil.
- Heat the oil and check the temperature on the thermometer when the cooling fan thermoswitch is operated.

TOOL 09900-25008: Multi circuit tester set

DATA Cooling fan thermoswitch specification:

OFF → ON: Approximately 96°C (205°F)
ON → OFF: Approximately 91°C (196°F)

INSTALLATION



Install the cooling fan thermoswitch in the reverse order of removal. Pay attention to the following points:

- Apply SUZUKI SUPER GREASE "A" to the O-ring.

For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"

- Tighten the cooling fan thermoswitch to the specified torque.

Cooling fan thermoswitch: 13 N·m (1.3 kgf-m, 9.5 lb-ft)

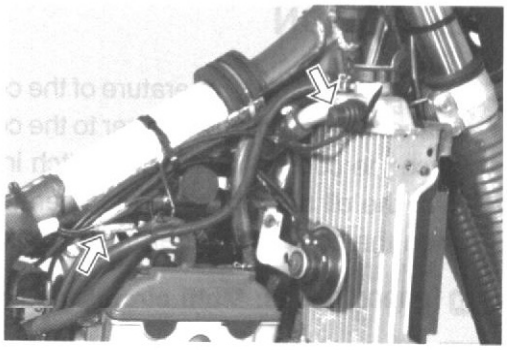
⚠ CAUTION

*** Take special care when handling the cooling fan thermoswitch. Do not subject it to strong blows or allow it to be dropped.**
*** Replace the removed O-ring with a new one.**

- After installing the cooling fan thermoswitch, be sure to add engine coolant. (☞ 2-15)

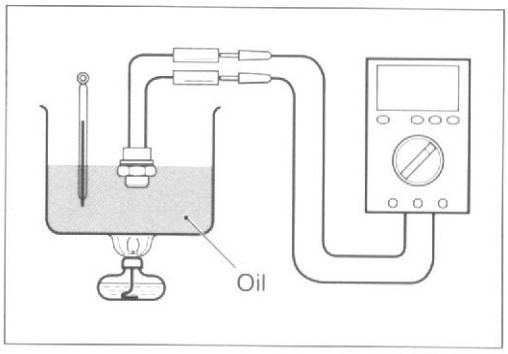
ENGINE COOLANT TEMPERATURE THERMOSWITCH

REMOVAL



- Remove the fuel tank. (☞ 4-2)
- Disconnect the engine coolant temperature thermoswitch lead wires and remove the engine coolant temperature thermoswitch.

INSPECTION



Check the operating temperature of the engine coolant temperature thermoswitch.

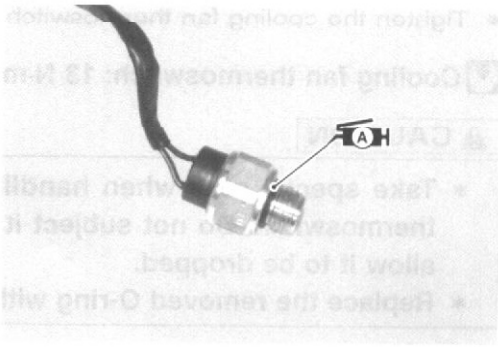
- Connect the multi circuit tester to the engine coolant temperature thermoswitch.
- Place the engine coolant temperature thermoswitch into a container of oil.
- Heat the oil and check the temperature on the thermometer when the engine coolant temperature thermoswitch is operated.

09900-25008: Multi circuit tester set

Engine coolant temperature thermoswitch specification:

OFF → ON: Approximately 117°C (243°F)
ON → OFF: Approximately 100°C (212°F)

INSTALLATION



Install the engine coolant temperature thermoswitch in the reverse order of removal. Pay attention to the following points:

- Apply SUZUKI SUPER GREASE "A" to the O-ring.

For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"

- Tighten the engine coolant temperature thermoswitch to the specified torque.

Engine coolant temperature thermoswitch:
13 N·m (1.3 kgf-m, 9.5 lb-ft)

⚠ CAUTION

Take special care when handling the engine coolant temperature thermoswitch. Do not subject it to strong blows or allow it to be dropped.

- After installing the engine coolant temperature thermoswitch, be sure to add engine coolant. (☞ 2-15)

THERMOSTAT

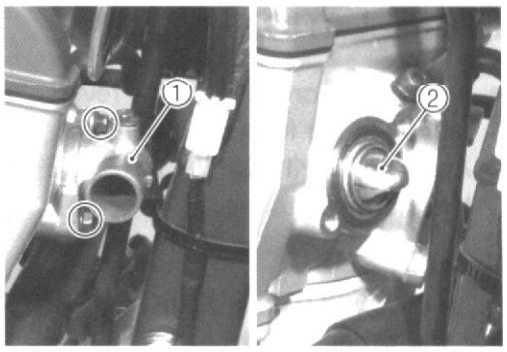
REMOVAL

- Drain the engine coolant. (☞ 2-15)
- Remove the right radiator. (☞ 5-6 and 5-7)

⚠ WARNING

*** Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.**
*** The engine must be cool before servicing the cooling system.**
*** Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.**

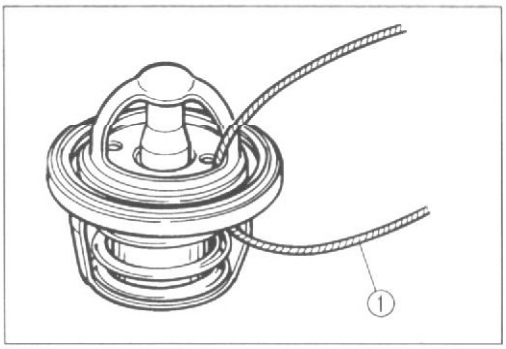
- Disconnect the thermostat case ① and remove the thermostat ②.



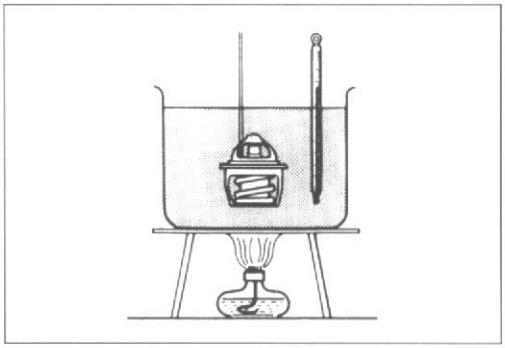
INSPECTION

Inspect the thermostat for cracks or damage. If any damages are found, replace the thermostat with a new one.
Check the opening temperature of the thermostat valve.

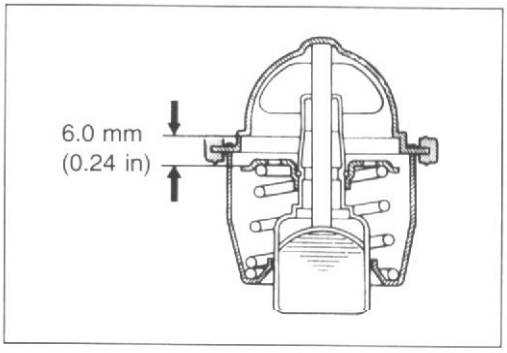
- Pass a string ① between the flange as shown.



- Immerse the thermostat into a container of water and keep it suspended as shown.



- Slowly heat the container and check the temperature on the thermometer when the thermostat valve begins to open.



DATA Thermostat valve opening temperature:
Approximately 75°C (167°F)

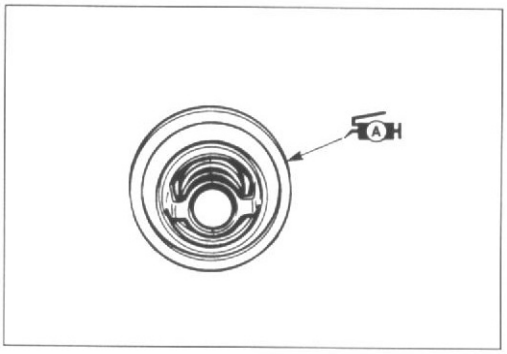
- Continue heating the container until the water temperature is above 90°C (194°F).
- When the water temperature reaches 90°C (194°F), the thermostat valve should have lifted at least 6.0 mm (0.24 in).

DATA Thermostat valve lift: over 6.0 mm at 90°C
(over 0.24 in at 194°F)

- If the thermostat is faulty in either of these two checks, replace it.

INSTALLATION

- Install the thermostat in the reverse order of removal. Pay attention to the following points.
- Apply SUZUKI SUPER GREASE "A" to the rubber seal on the thermostat.



For USA
A 99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
A 99000-25010: SUZUKI SUPER GREASE "A"

- After installing the thermostat, be sure to add engine coolant. (☞ 2-15)

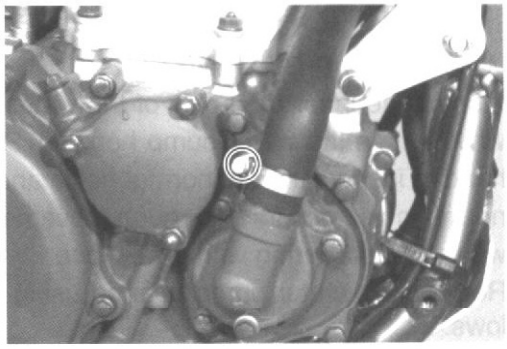
WATER PUMP

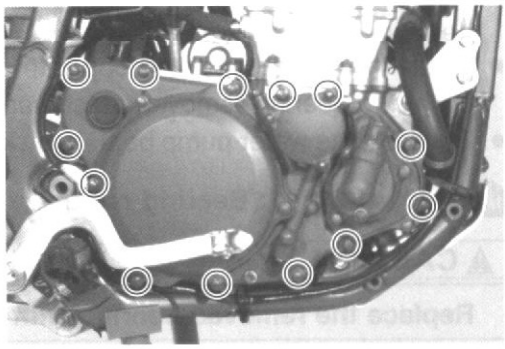
REMOVAL AND DISASSEMBLY

- Drain the engine coolant. (☞ 2-15)
- Drain the engine oil. (☞ 2-11)

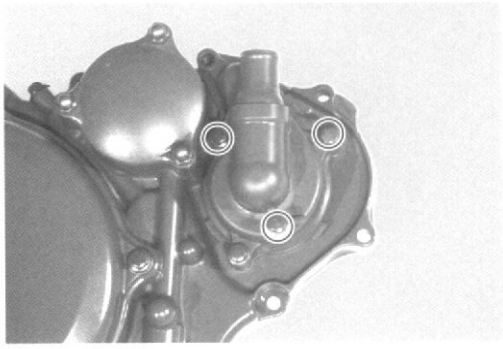
⚠ WARNING

*** Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.**
*** The engine must be cool before servicing the cooling system.**
*** Engine coolant may be harmful if swallowed or if it comes in contact with the skin or eyes. If engine coolant gets into the eyes or contacts the skin, flush the eyes or wash the skin thoroughly, with plenty of water. If engine coolant is swallowed, induce vomiting and call a physician immediately.**

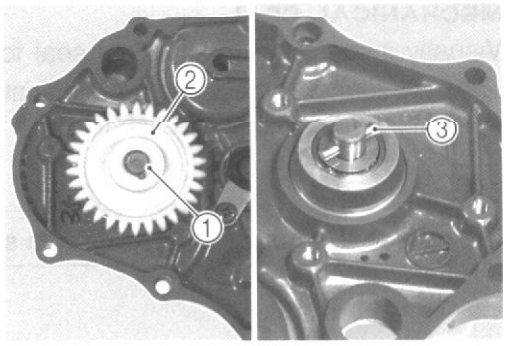




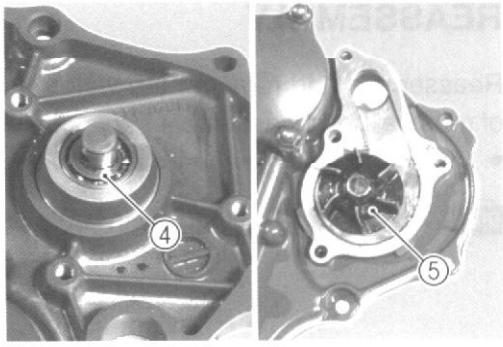
- Disconnect the radiator hose.
- Remove the right crankcase cover.
- Remove the water pump cover.



- Remove the circlip ①, water pump driven gear ② and pin ③.



- Remove the E-ring ④ and impeller ⑤.



INSPECTION

WATER PUMP BEARING

Inspect the inner race play of the water pump bearing by hand while it is in the water pump housing. Rotate the inner race by hand to inspect it for abnormal noise and smooth rotation. If abnormal noise occurs or if rough movement is noted, replace the water pump bearing with a new one.

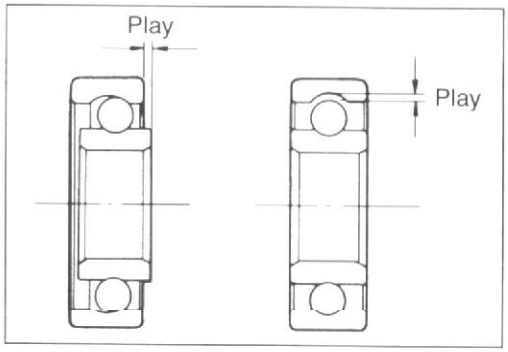
Remove the water pump bearing using the special tool, as follows:

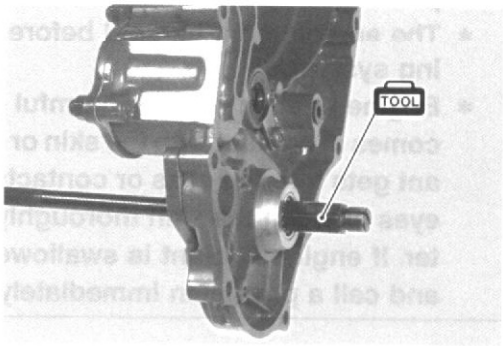
- Insert the bearing remover attachment into the water pump bearing.
- Install the wedge from the opposite side and lock it into the slit of the bearing remover attachment.
- Drive out the water pump bearing by knocking the wedge bar.

09941-50111: Bearing remover

⚠ CAUTION

Replace the removed bearing with a new one.





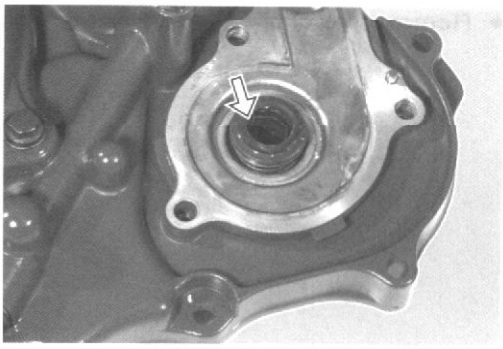
MECHANICAL SEAL

Visually inspect the mechanical seal for damage. If any damages are found, replace the mechanical seal with a new one.

- Remove the mechanical seal.

⚠ CAUTION

Replace the removed mechanical seal with a new one.

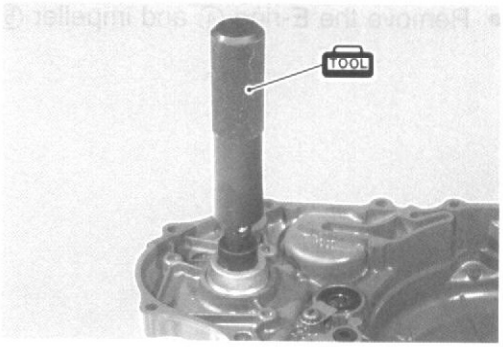


REASSEMBLY

Reassemble and remount the water pump in the reverse order of removal and disassembly. Pay attention to the following points:

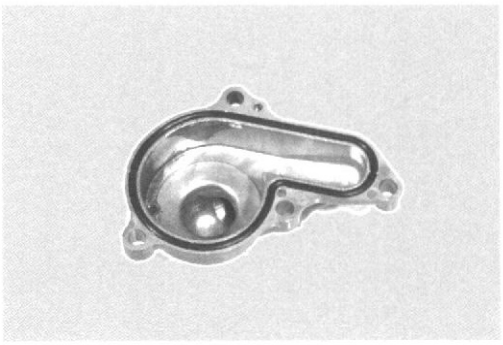
- Install the water pump bearings using the special tool.

09913-70210: Bearing installer set

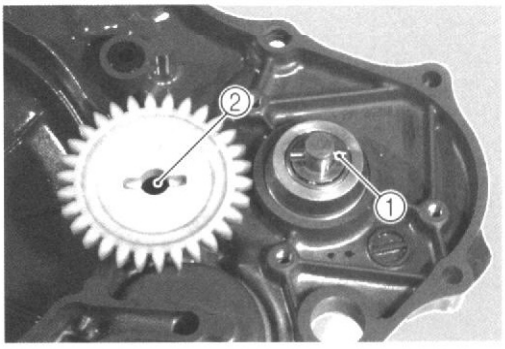


- Apply SUZUKI SUPER GREASE "A" to the new O-ring.

For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"



- When installing the water pump driven gear align the pin ① with the groove ②.
- After installing the water pump, be sure to add engine coolant. (☞ 2-15)



CHASSIS

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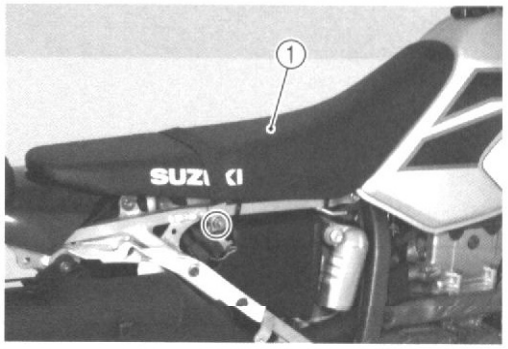
EXTERIOR PARTS

REMOVAL

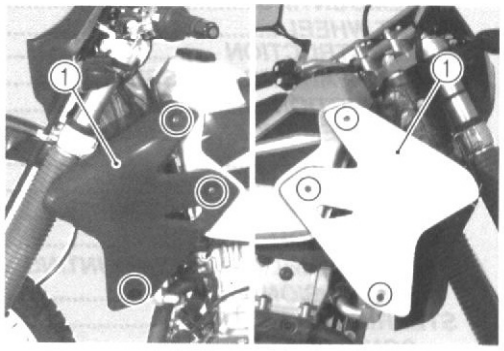
SEAT

- Remove the right frame cover. (☞ 6-2)
- Remove the seat ①.



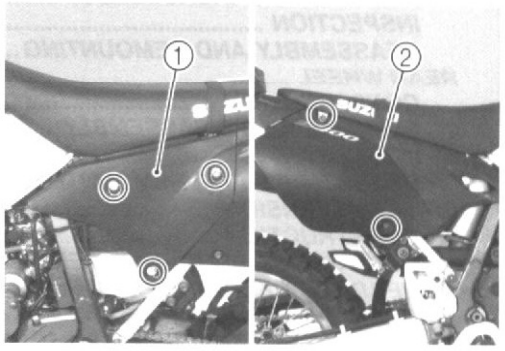
SIDE COVERS

- Remove the left and right side covers ①.



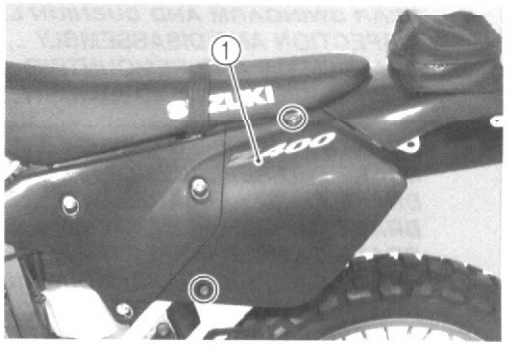
FRAME COVERS

- Remove the left frame cover ① and right frame cover ②.



BATTERY COVER

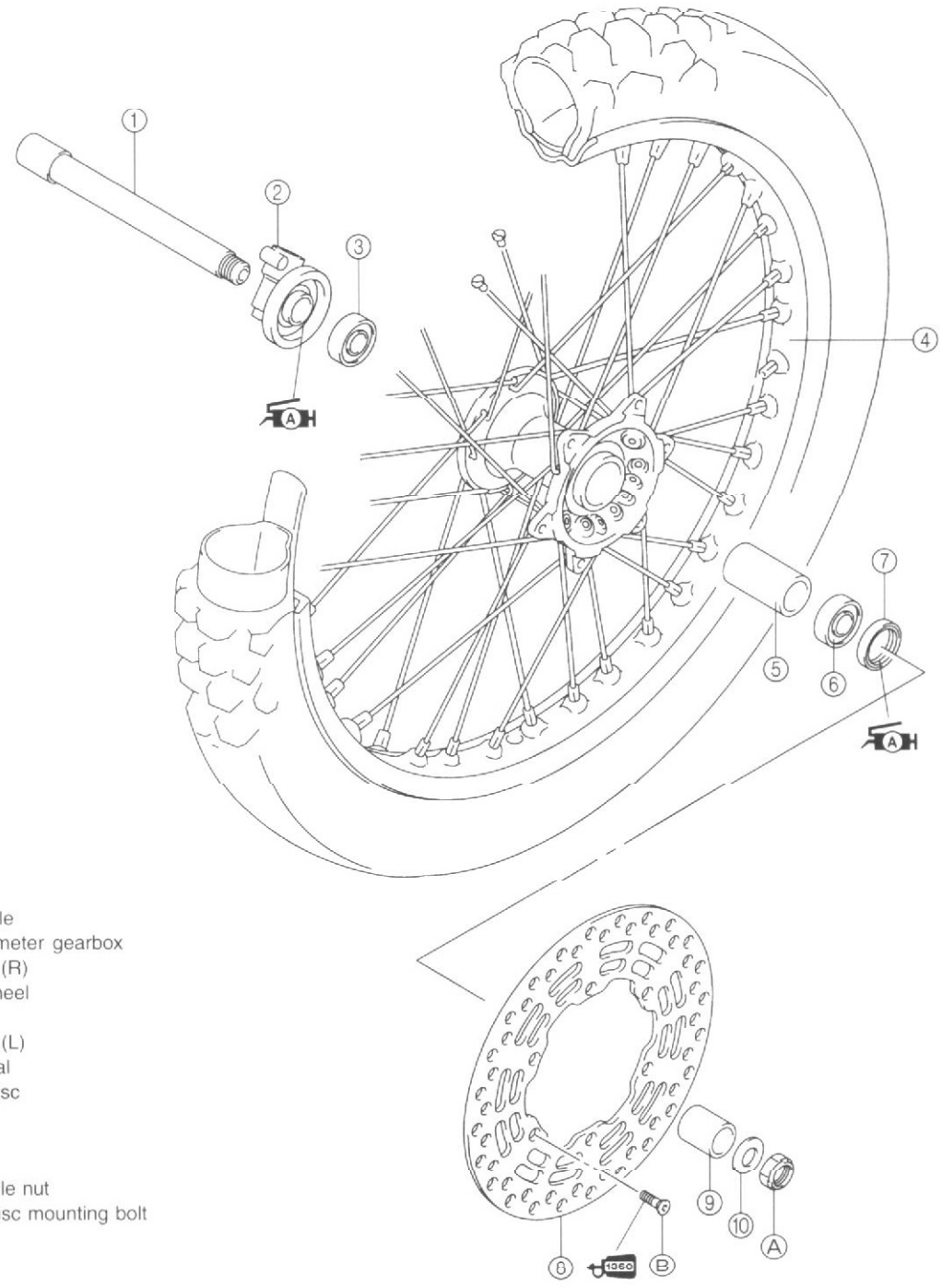
- Remove the battery cover ①.



REMOUNTING

Remount the seat, side covers, frame covers, and battery cover in the reverse order of removal.

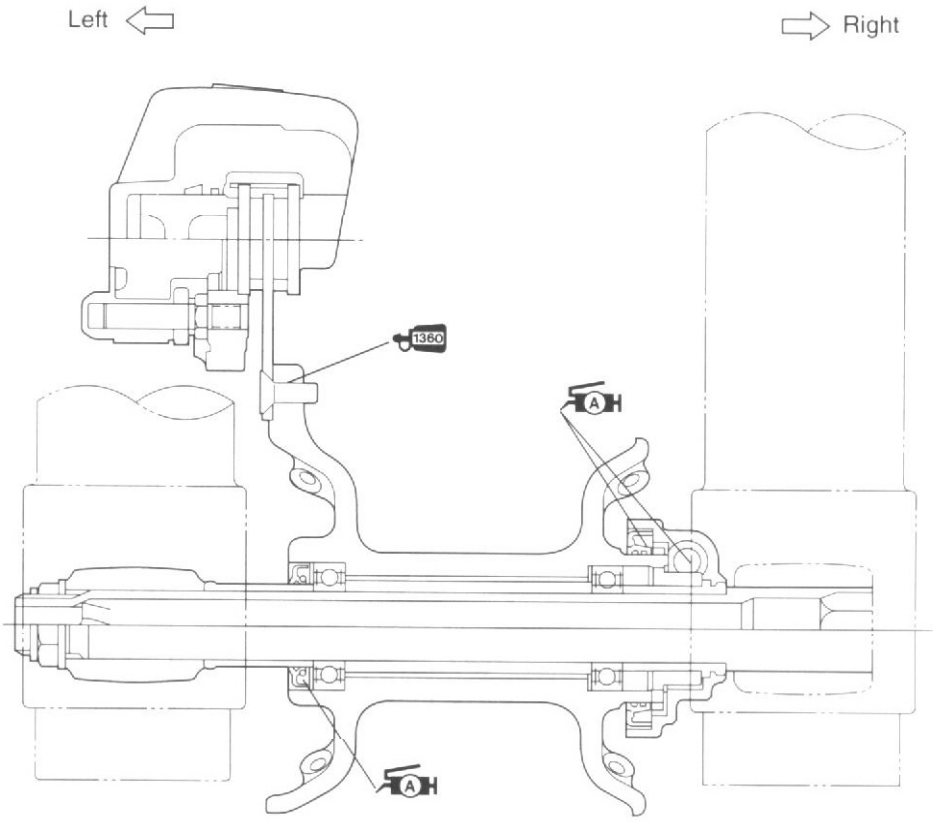
FRONT WHEEL
CONSTRUCTION

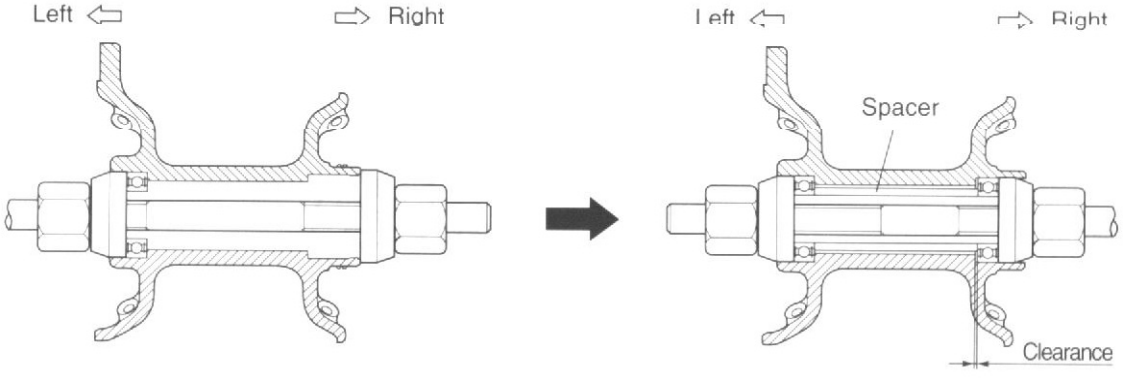


① Front axle
② Speedometer gearbox
③ Bearing (R)
④ Front wheel
⑤ Spacer
⑥ Bearing (L)
⑦ Dust seal
⑧ Brake disc
⑨ Spacer
⑩ Washer

Ⓐ Front axle nut
Ⓑ Brake disc mounting bolt

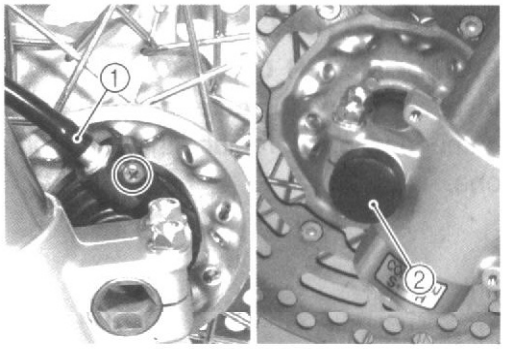
ITEM	N·m	kgf-m	lb-ft
Ⓐ	42	4.2	30.5
Ⓑ	10	1.0	7.0


Left
Right
1360
A
A

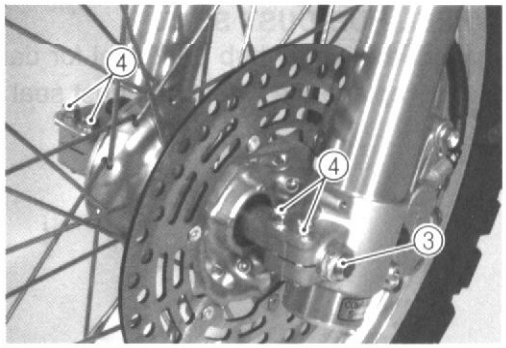

Left
Right
Left
Right
Spacer
Clearance

REMOVAL AND DISASSEMBLY

- Disconnect the speedometer cable ① and remove the axle nut cap ②. (Except for E-03, 28, 33)



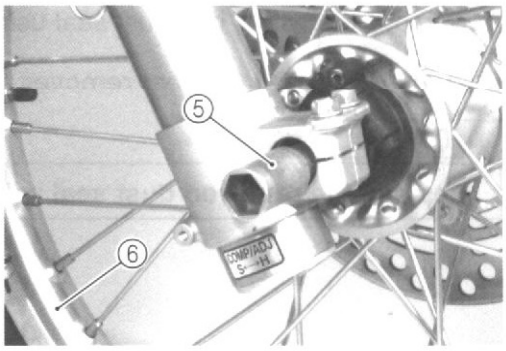
- Remove the front axle nut ③ and loosen the front axle pinch bolts ④.



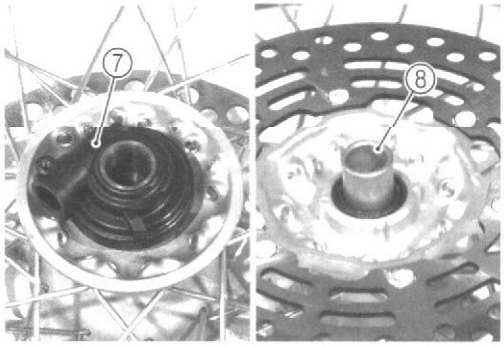
- Support the motorcycle with a jack or wooden block and remove the front axle ⑤ and front wheel ⑥.

⚠ CAUTION

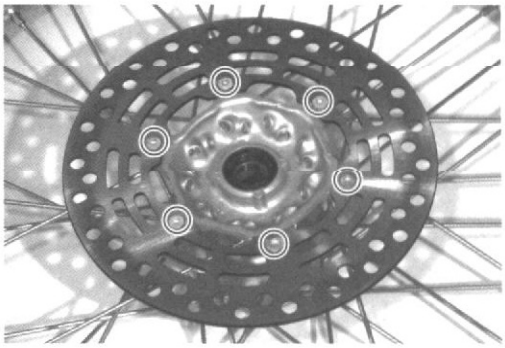
Do not operate the brake lever during or after front wheel removal.



- Remove the speedometer gearbox ⑦ and spacer ⑧.



- Remove the brake disc.



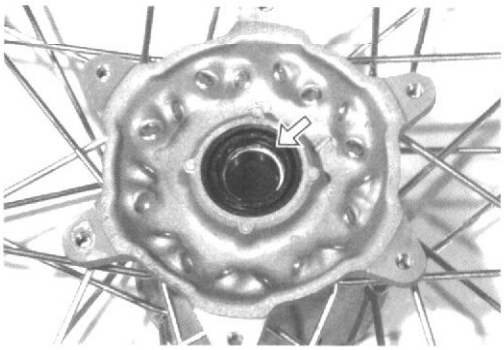
INSPECTION

SPEEDOMETER GEARBOX DUST SEAL

Inspect the speedometer gearbox dust seal for damage. If any damage is found, replace the speedometer gearbox with a new one.

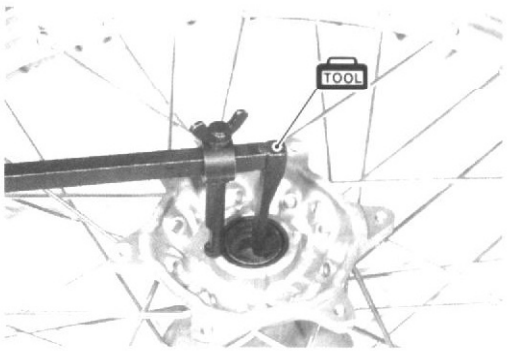
WHEEL HUB DUST SEAL

Inspect the wheel hub dust seal for damage. If any damage is found, replace the wheel hub dust seal with a new one.



- Remove the wheel hub dust seal using the special tool.

TOOL 09913-50121: Oil seal remover

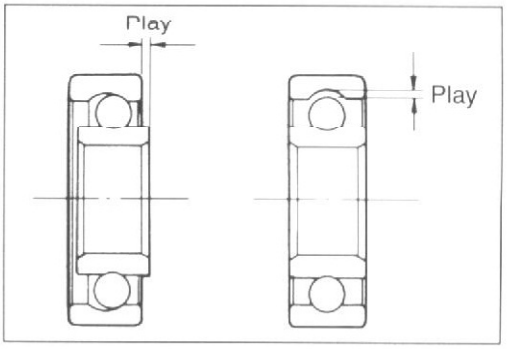


⚠ CAUTION

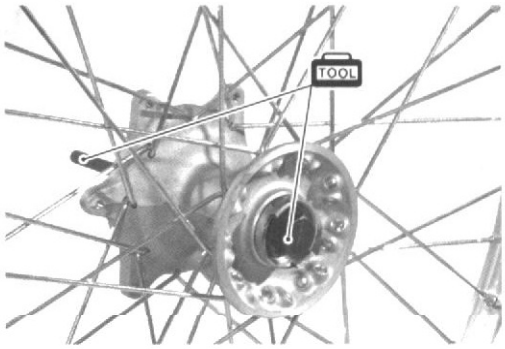
Replace the removed dust seal with a new one.

WHEEL BEARINGS

Inspect the play of the wheel bearings by hand while they are in the wheel. Rotate the inner race by hand to inspect for abnormal noise and smooth rotation. If any abnormal noise occurs, or rough movement is noted, replace the wheel bearings with new ones.



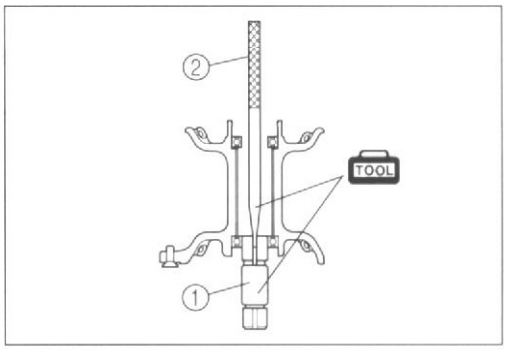
Remove the wheel bearings as follows:
- Remove the wheel hub dust seal. (☞ 6-6)
- Insert the bearing remover attachment ① into the wheel bearing.
- Insert the wedge bar ② from the opposite side and lock it into the slit of the bearing remover attachment.
- Drive out the wheel bearing by striking the wedge bar.



TOOL 09941-50111: Bearing remover

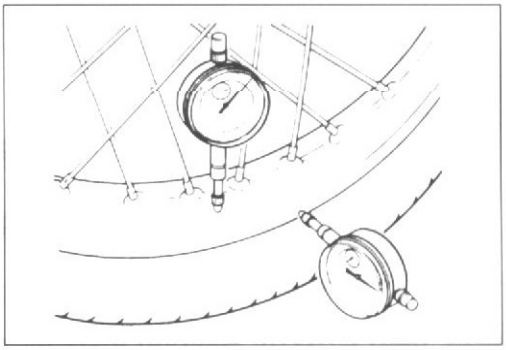
⚠ CAUTION

Replace the removed bearings with new ones.



FRONT WHEEL

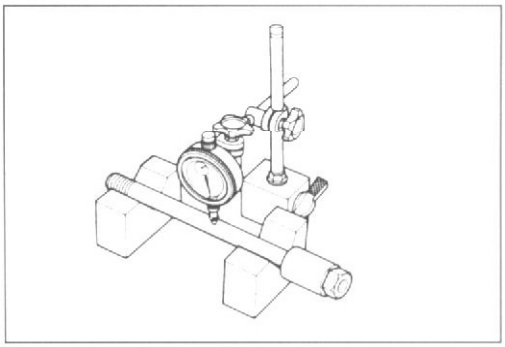
Make sure that the wheel runout (axial and radial) does not exceed the service limit when checked as shown. An excessive amount of runout is usually due to worn or loose wheel bearings and can be corrected by replacing the bearings. If bearing replacement fails to reduce the runout, replace the wheel with a new one.



DATA Wheel rim runout (axial and radial)
Service Limit: 2.0 mm (0.08 in)

FRONT AXLE

Measure the front axle runout using the dial gauge. If the runout exceeds the service limit, replace the front axle with a new one.



TOOL 09900-20606: Dial gauge (1/100 mm)
09900-20701: Magnetic stand
09900-21304: V-block set (100 mm)

DATA Wheel axle runout
Service Limit: 0.25 mm (0.010 in)

TIRE ..... ☞ 2-21 and 2-22
SPOKE NIPPLES ..... ☞ 2-22

REASSEMBLY AND REMOUNTING

Reassemble and remount the front wheel in the reverse order of removal and disassembly. Pay special attention to the following points:

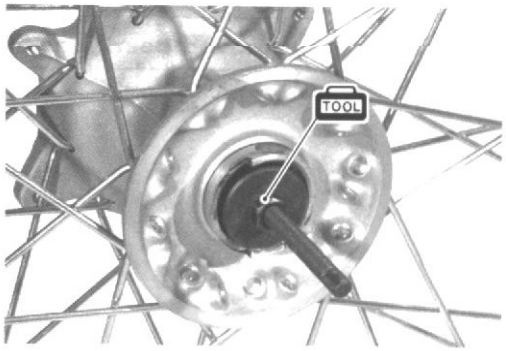
WHEEL BEARINGS

- Install the wheel bearings using the special tool.

09924-84521: Bearing installer set

⚠ CAUTION

First, install the left wheel bearing, and then install the right wheel bearing. (☞ 6-4)



WHEEL HUB DUST SEAL

- Apply SUZUKI SUPER GREASE "A" to the lip of dust seal.

For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"

- Install the wheel hub dust seal using the special tool.

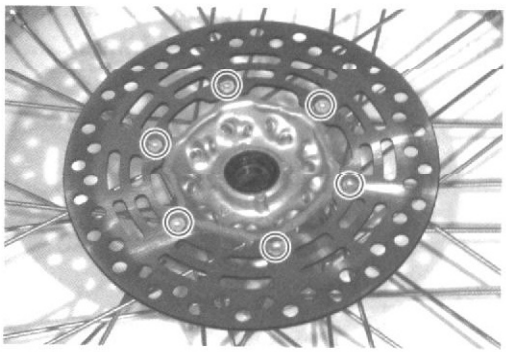
09913-70210: Bearing installer set

BRAKE DISC

- Make sure that the brake disc is clean and free of any grease. Apply THREAD LOCK SUPER "1360" to the brake disc mounting bolts, and then tighten them to the specified torque.

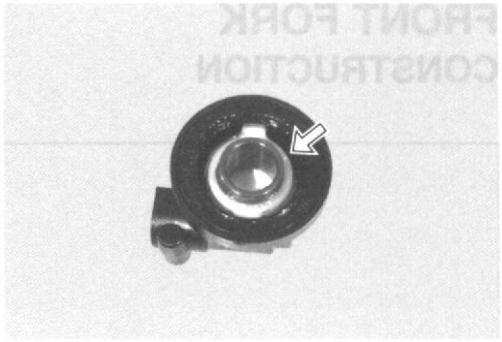
99000-32130: THREAD LOCK SUPER "1360"

Brake disc mounting bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)



SPEEDOMETER GEARBOX

- Apply SUZUKI SUPER GREASE "A" to the speedometer gearbox dust seal.



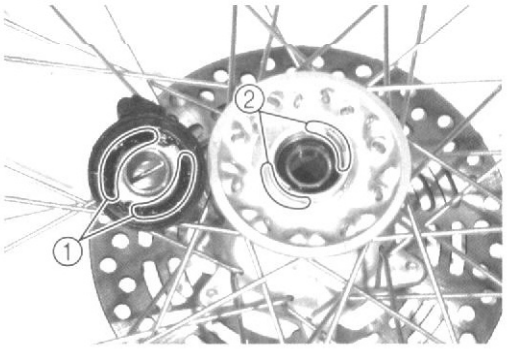
For USA

99000-25030: SUZUKI SUPER GREASE "A"

For the other countries

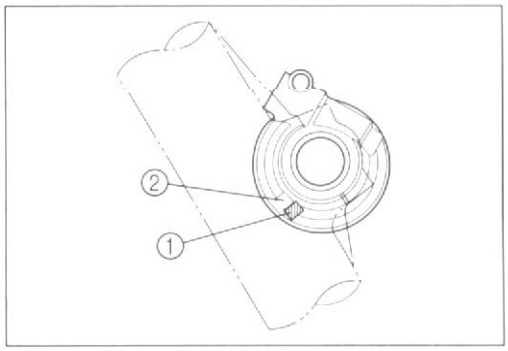
99000-25010: SUZUKI SUPER GREASE "A"

- Align the grooves ① on the speedometer gearbox with the lugs ② on the wheel hub.

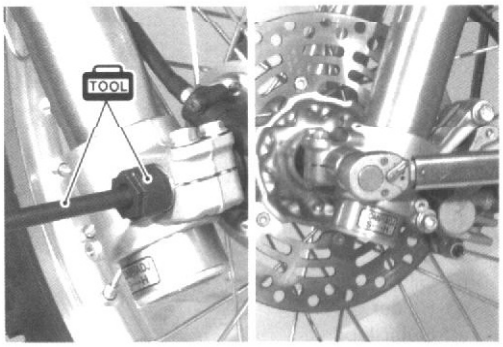


FRONT WHEEL

- Make sure that the front fork stopper ① and the speedometer gearbox stopper ② are installed as shown.



- Tighten the front axle nut to 20 N·m (2.0 kgf-m, 14.5 lb-ft) by holding the front axle using the special tools.



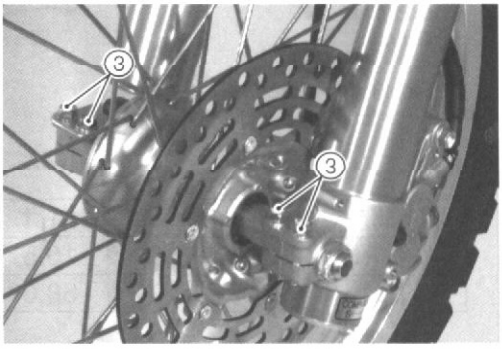
TOOL 09940-34520: T handle
09940-34581: Attachment F

- Tighten the front axle pinch bolts ③ to the specified torque.

Front axle pinch bolt: 18 N·m (1.8 kgf-m, 13.0 lb-ft)

- Tighten the front axle nut to the specified torque, after tightening the axle pinch bolts.

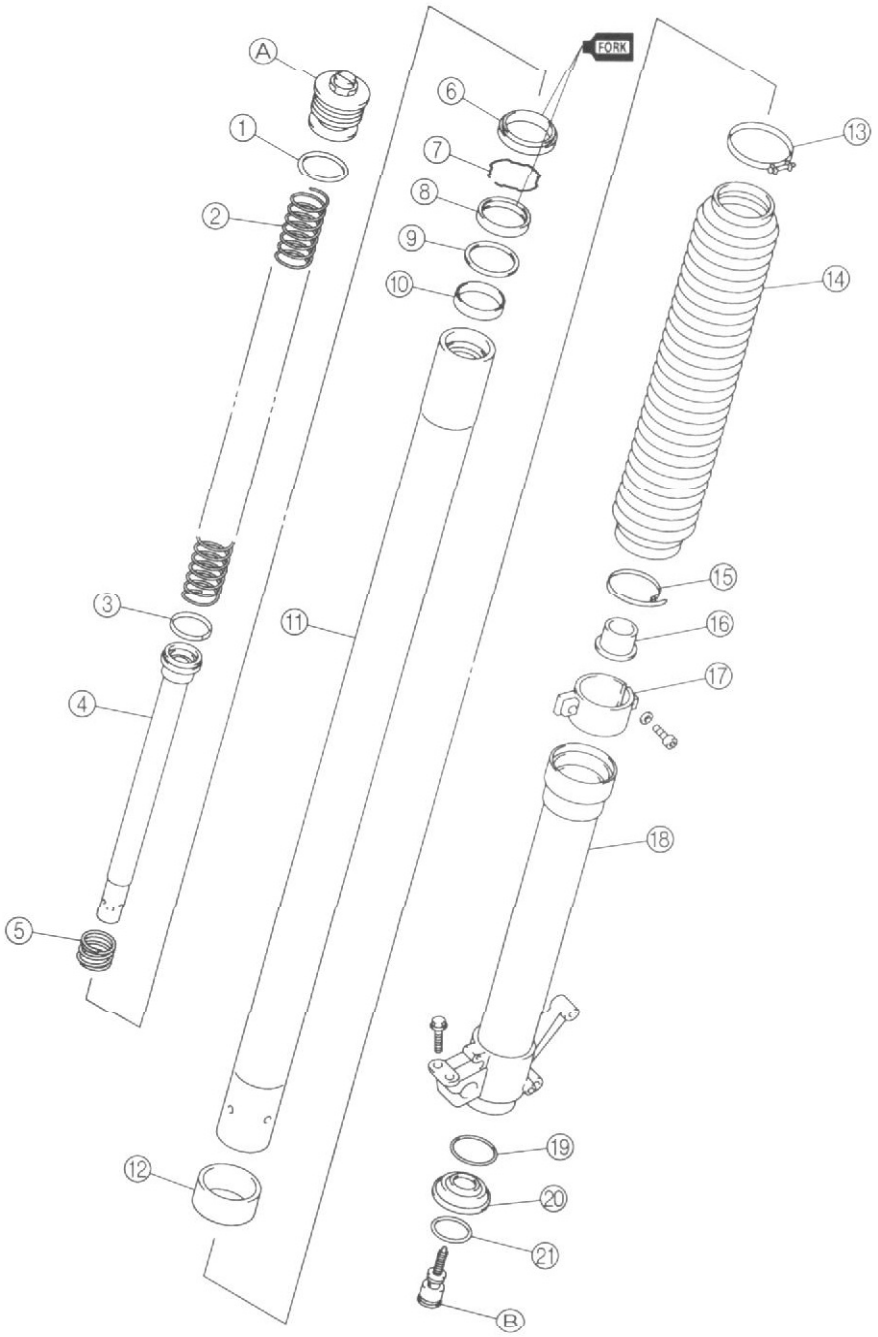
Front axle nut: 42 N·m (4.2 kgf-m, 30.5 lb-ft)



NOTE:

After remounting the front wheel, pump the brake lever a few times to check for proper brake operation.

FRONT FORK
CONSTRUCTION



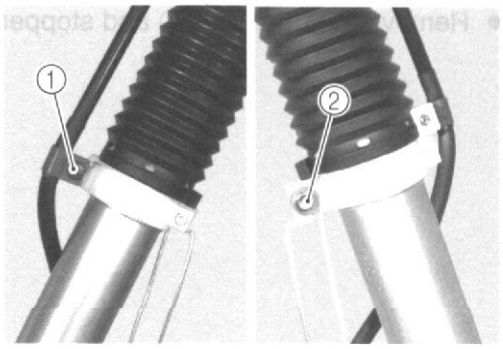
① O-ring
② Fork spring
③ Damper rod ring
④ Damper rod
⑤ Rebound spring
⑥ Dust seal
⑦ Stopper ring
⑧ Oil seal
⑨ Oil seal retainer
⑩ Inner tube antifriction metal
⑪ Inner tube
⑫ Outer tube antifriction metal
⑬ Clamp
⑭ Boot
⑮ Clamp
⑯ Oil lock piece
⑰ Holder
⑱ Outer tube
⑲ O-ring
⑳ End plate
㉑ O-ring

Ⓐ Front fork cap bolt
Ⓑ Front fork damper rod bolt

ITEM	N·m	kgf-m	lb-ft
Ⓐ	23	2.3	16.5
Ⓑ	80	8.0	58.0

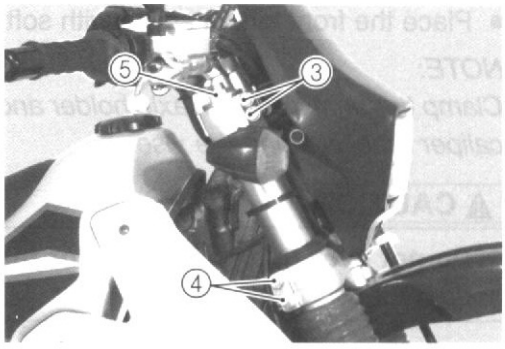
REMOVAL AND DISASSEMBLY

- Remove the front wheel. (☞ 6-5)
- Remove the front brake caliper. (☞ 6-43)
- Remove the brake hose clamp ① and speedometer cable guide ②.



- Remove the front fork after loosening the front fork upper clamp bolts ③ and lower clamp bolts ④.

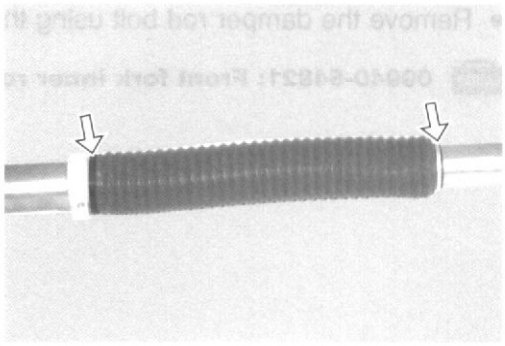
NOTE:
Slightly loosen the front fork cap bolt ⑤ to facilitate later disassembly.



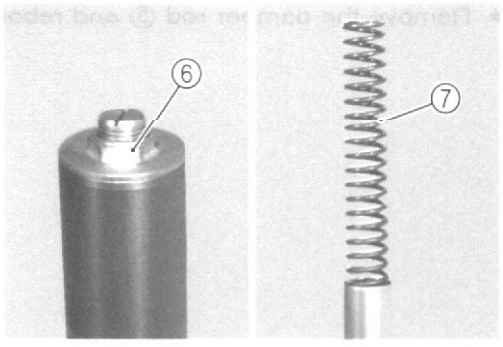
- Remove the boot.

⚠ CAUTION

Replace the removed lower boot clamp with a new one.

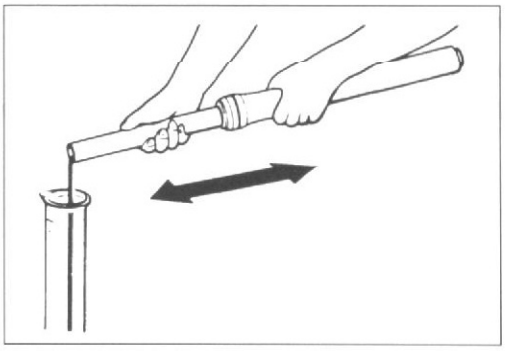


- Remove the cap bolt ⑥ and fork spring ⑦.

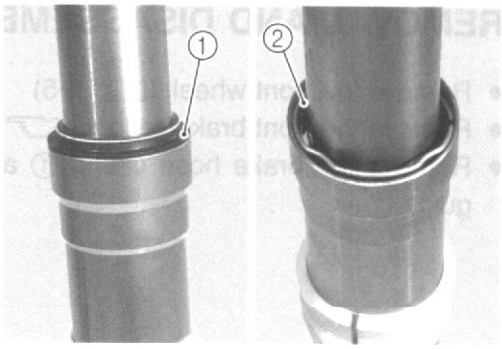


- Invert the fork and stroke it several times to drain out the fork oil.

NOTE:
Hold the fork inverted for a few minutes to drain the oil.



- Remove the dust seal ① and stopper ring ②.



- Place the front fork in a vise with soft jaws.

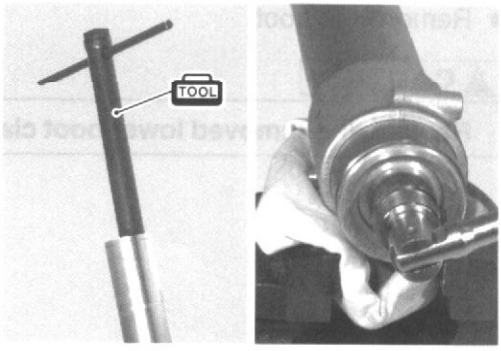
NOTE:
Clamp the right front fork axle holder and the left front fork brake caliper bracket using the vise.

⚠ CAUTION

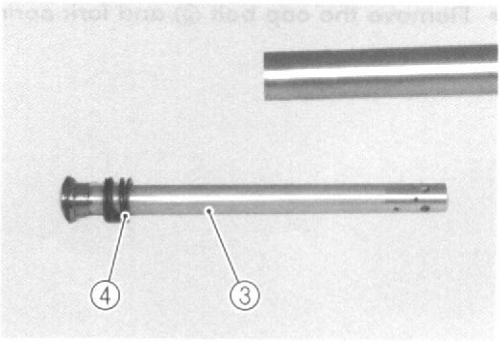
Do not over tighten the vise or the outer tube will be damaged.

- Remove the damper rod bolt using the special tool.

TOOL 09940-54821: Front fork inner rod holder

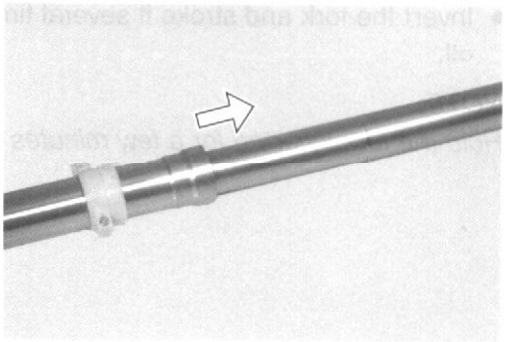


- Remove the damper rod ③ and rebound spring ④.

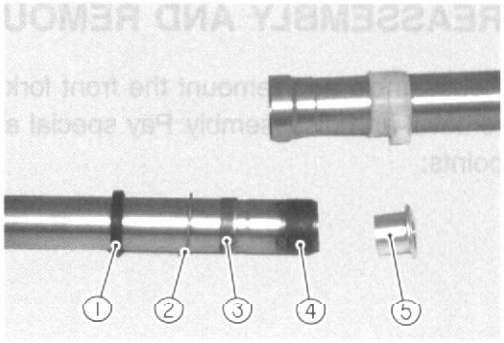


- Slowly pull out the inner tube.

NOTE:
Be careful not to damage the inner tube.



- Remove the oil seal ①, oil seal retainer ②, outer tube antifriction metal ③ inner tube antifriction metal ④, and oil lock piece ⑤.



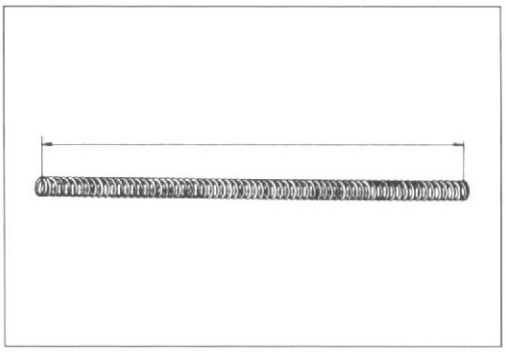
⚠ CAUTION

The outer and inner tube's antifriction metals must be replaced along with the oil seal and dust seal when assembling the front fork.

INSPECTION

FORK SPRING

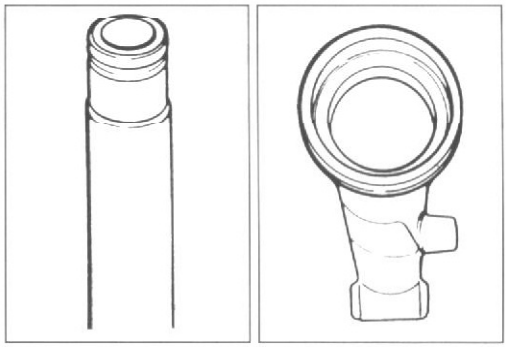
Measure the fork spring free length. If the fork spring free length is shorter than the service limit, replace the fork spring with a new one.



DATA Front fork spring free length
Service Limit: 561 mm (22.1 in)

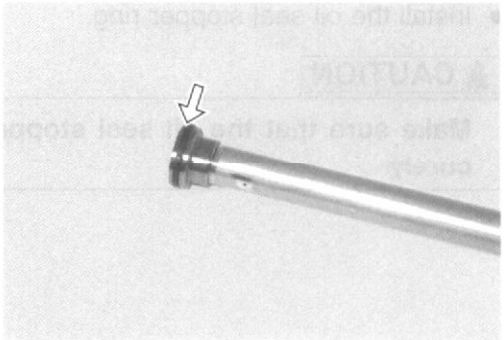
INNER AND OUTER TUBE

Inspect the inner tube sliding surface and outer tube sliding surface for any scuffing or damage. If any damages are found, replace the inner tube and outer tube with new ones.



DAMPER ROD RING

Inspect the damper rod ring for wear or damage. If any damages are found, replace the fork cylinder ring with a new one.

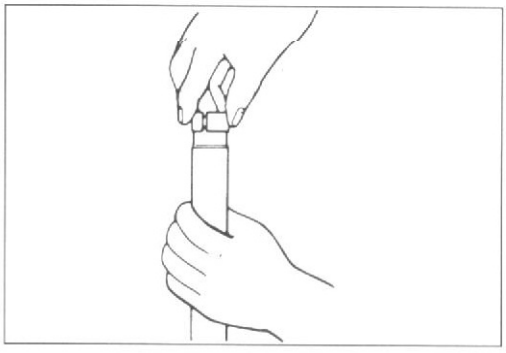


REASSEMBLY AND REMOUNTING

Reassemble and remount the front fork in the reverse order of removal and disassembly. Pay special attention to the following points:

ANTIFRICTION METALS, OIL SEAL, AND DUST SEAL

- Hold the inner tube vertically, clean the metal groove, and install the inner tube antifriction metal by hand.



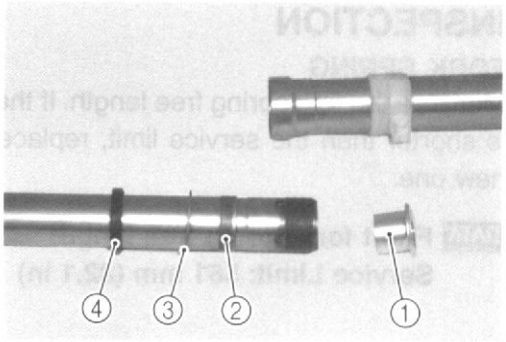
⚠ CAUTION

*** Do not damage the Teflon coated surface of the inner tube antifriction metal when mounting the inner tube.**
*** Apply fork oil to the inner and outer tube antifriction metals.**

- Apply front fork oil to the lip of oil seal lightly before installing it.

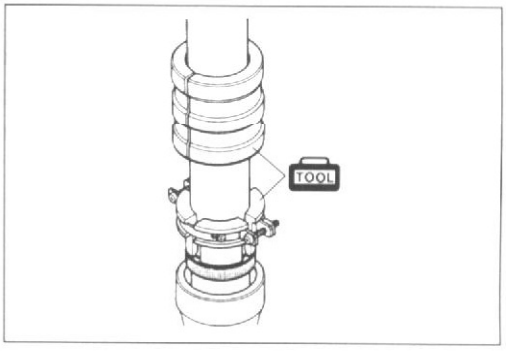
FORK 99000-99001-SS5: SUZUKI FORK OIL SS-05

- Install the oil lock piece ①, outer tube antifriction metal ②, oil seal retainer ③, and oil seal ④ onto the inner tube.



- Insert the inner tube into the outer tube and install the oil seal using the special tool.

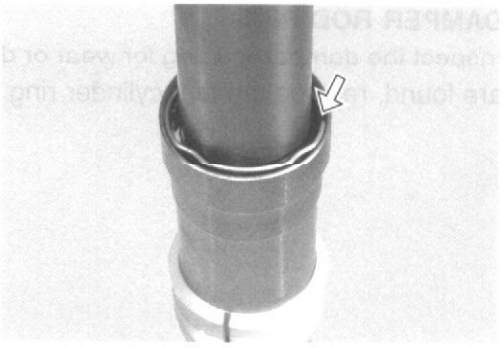
TOOL 09940-52861: Front fork oil seal installer set



- Install the oil seal stopper ring.

⚠ CAUTION

Make sure that the oil seal stopper ring is fitted securely.

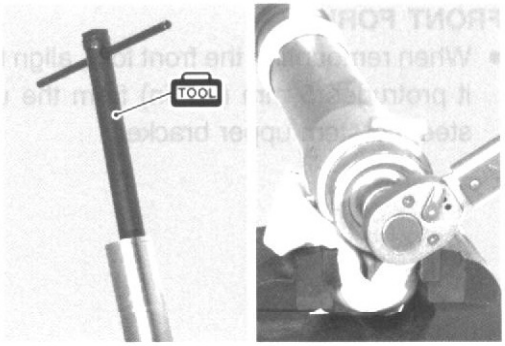


DAMPER ROD BOLT

- Tighten the front fork damper rod bolt to the specified torque using the special tool.

TOOL 09940-54821: Front fork inner rod holder

Frant fork damper rod bolt: 80 N·m (8.0 kgf-m, 58.0 lb-ft)



⚠ CAUTION

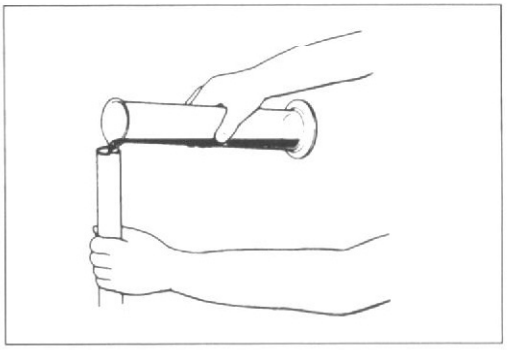
Use a new O-ring to prevent oil leakage.

FORK OIL

- Place the front fork vertically without the spring.
- Pour the specified fork oil into the inner tube.

FORK 99000-99001-SS5: SUZUKI FORK OIL SS-05

DATA Standard fork oil capacity (each leg):
709 ml (24.0 US oz, 25.0 Imp oz)

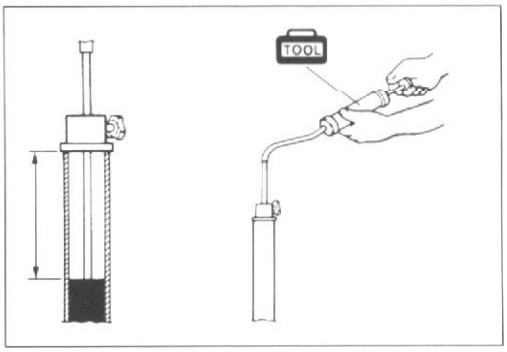


- Move the inner tube slowly several times.

- Hold the front fork in a vertical position and adjust the fork oil level using the special tool.

TOOL 09943-74111: Fork oil level gauge

DATA Fork oil level
Standard: 165 mm (6.5 in)

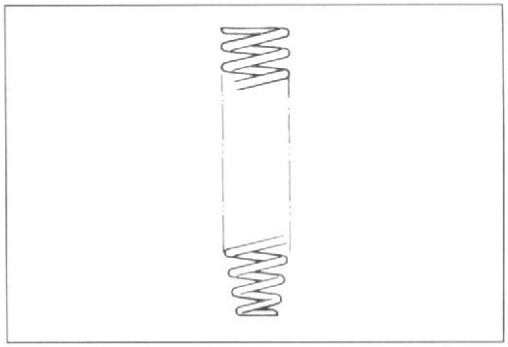


NOTE:
Before adjusting the oil level, remove the fork spring and compress the inner tube fully.

FORK SPRING

- Install the fork spring.

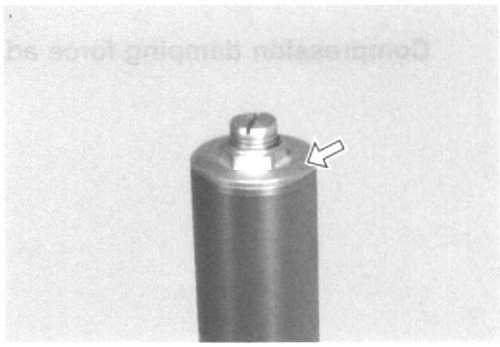
NOTE:
The end of the fork spring with the smaller inside diameter should be at the bottom of the front fork.



CAP BOLT

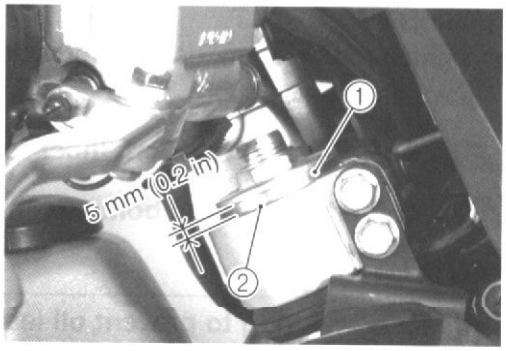
- Install the cap bolt.

NOTE:
Before installing the cap bolt turn the spring adjuster to the softest position.



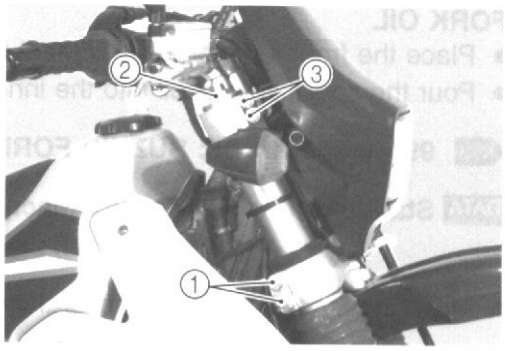
FRONT FORK

- When remounting the front fork, align the inner tube ① so that it protrudes 5 mm (0.2 in) from the upper surface ② of the steering stem upper bracket.



- Tighten the front fork lower clamp bolts ①, front fork cap bolt ②, and front fork upper clamp bolts ③ to the specified torque.

Front fork lower clamp bolt: 32 N·m (3.2 kgf-m, 23.0 lb-ft)
Front fork upper clamp bolt: 30 N·m (3.0 kgf-m, 21.5 lb-ft)
Front fork cap bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)



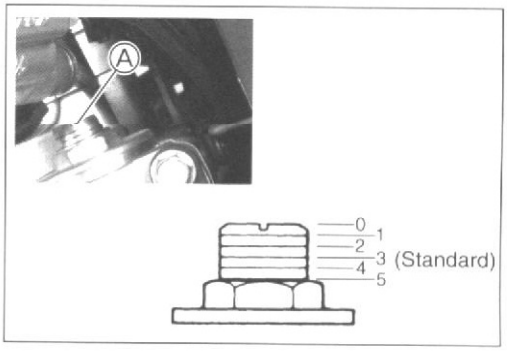
FRONT WHEEL ..... ☞ 6-9

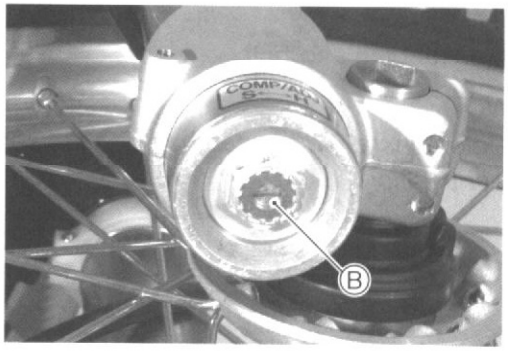
NOTE:
Before tightening the front axle nut and front axle pinch bolts, move the front fork up and down four or five times.

SUSPENSION SETTING

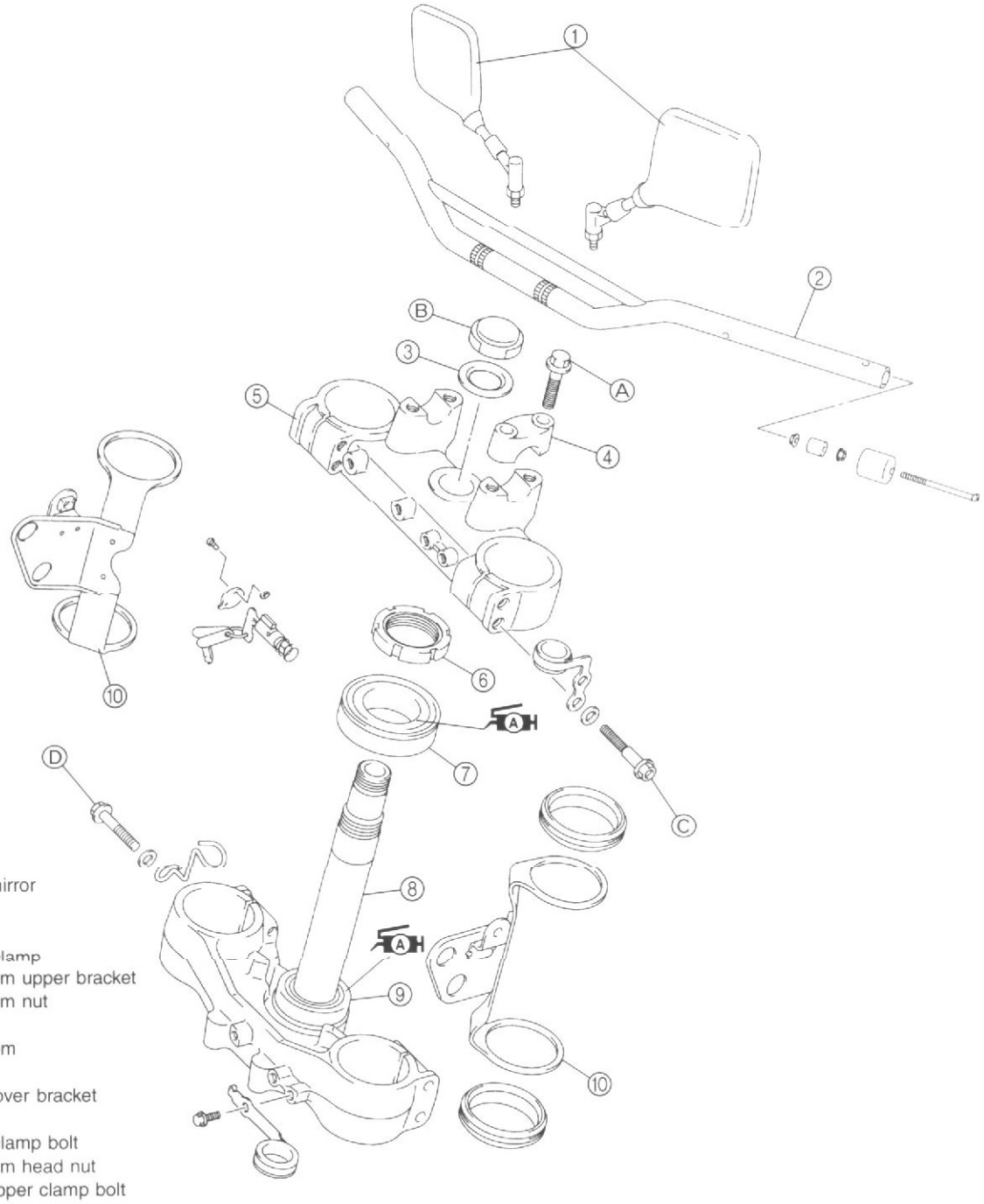
After installing the front fork, adjust the fork spring and compression damping force as follows.
Fully turn the compression damping force adjuster clockwise to the hard setting position, and then turn it out to the standard setting position.

DATA Standard setting position
Front fork spring pre-load adjuster Ⓐ:
3rd groove from top
Compression damping force adjuster Ⓑ: 7 clicks out





STEERING
CONSTRUCTION

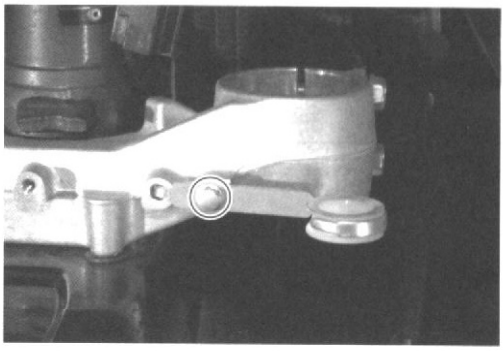


① Rear view mirror
② Handlebar
③ Washer
④ Handlebar clamp
⑤ Steering stem upper bracket
⑥ Steering stem nut
⑦ Bearing
⑧ Steering stem
⑨ Bearing
⑩ Headlight cover bracket

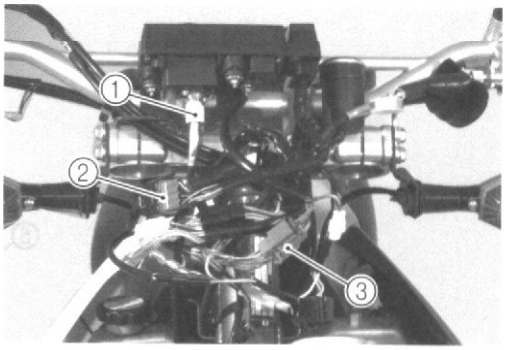
Ⓐ Handlebar clamp bolt
Ⓑ Steering stem head nut
Ⓒ Front fork upper clamp bolt
Ⓓ Front fork lower clamp bolt

ITEM	N·m	kgf-m	lb-ft
Ⓐ	23	2.3	16.5
Ⓑ	90	9.0	65.0
Ⓒ	30	3.0	21.5
Ⓓ	32	3.2	23.0

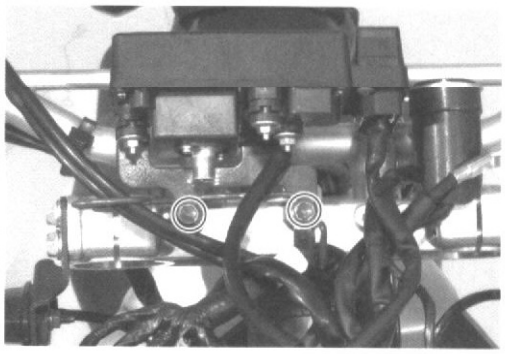
REMOVAL AND DISASSEMBLY



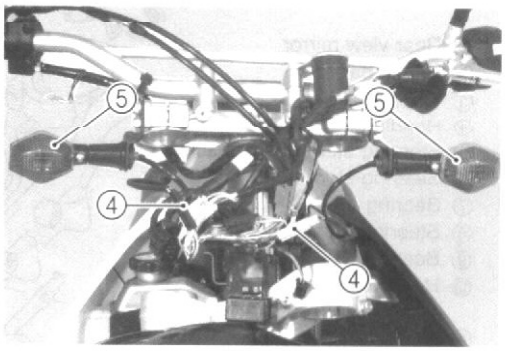
- Remove the front fork. (☞ 6-11)
- Remove the master cylinder assembly. (☞ 6-47)
- Remove the headlight assembly. (☞ 7-29)
- Remove the front brake hose guide bolt.



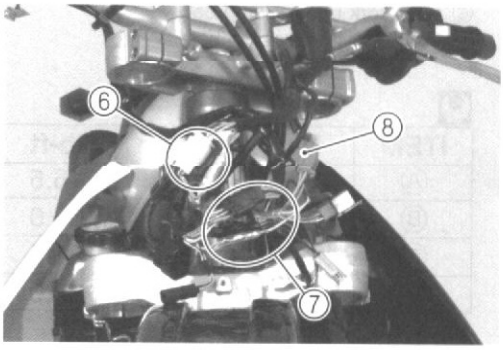
- Disconnect the speedometer cable ①, indicator lights coupler ②, and speedometer coupler ③.



- Remove the speedometer assembly.

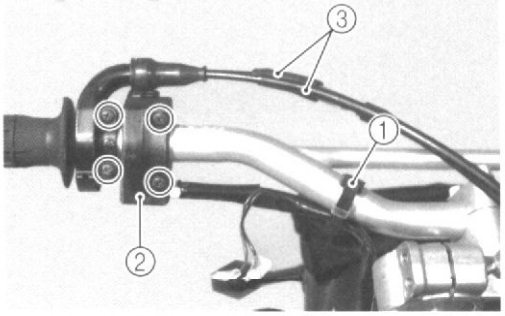


- Disconnect the left and right turn signal light couplers ④ and remove the left and right turn signal light ⑤.

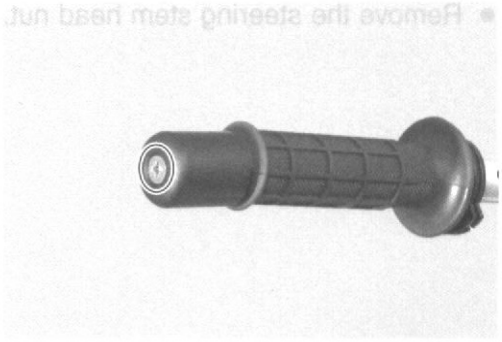


- Disconnect the left handlebar switch lead wire and coupler ⑥, right handlebar switch lead wire and coupler ⑦, and ignition switch coupler ⑧.

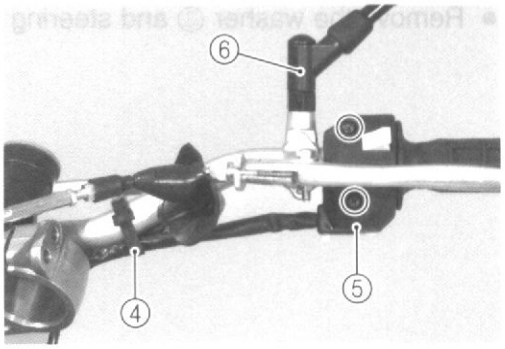
- Remove the clamp ①, right handlebar switch ②, and throttle cables ③.



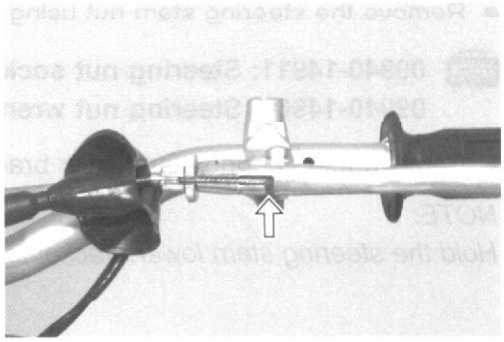
- Remove the throttle grip.



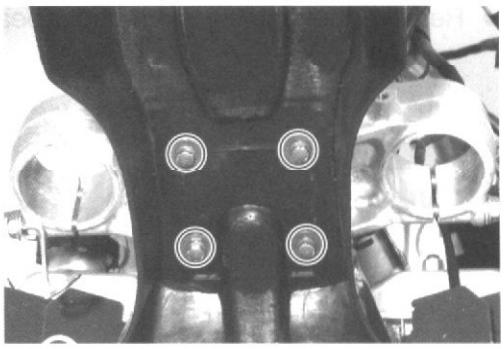
- Remove the clamp ④, left handlebar switch ⑤ and left rear view mirror ⑥.



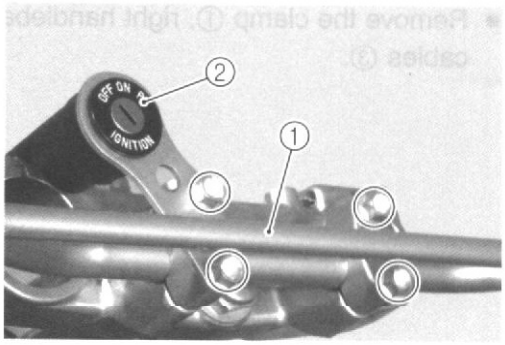
- Disconnect the clutch cable.



- Remove the front fender.

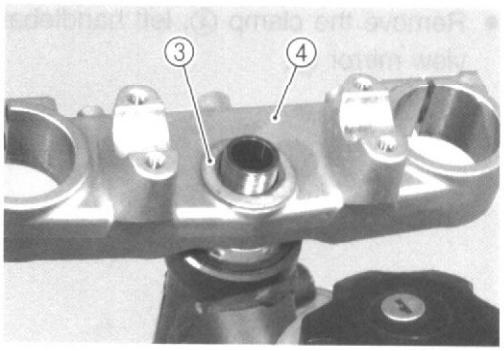


- Remove the handlebar ① and ignition switch ②.



- Remove the steering stem head nut.

- Remove the washer ③ and steering stem upper bracket ④.

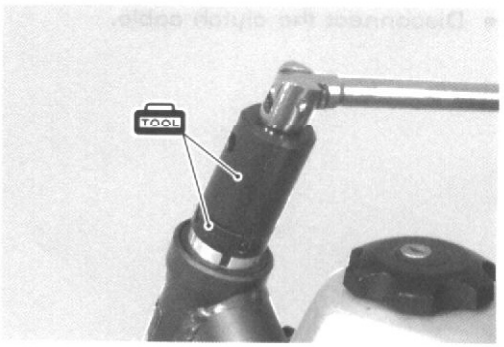


- Remove the steering stem nut using the special tools.

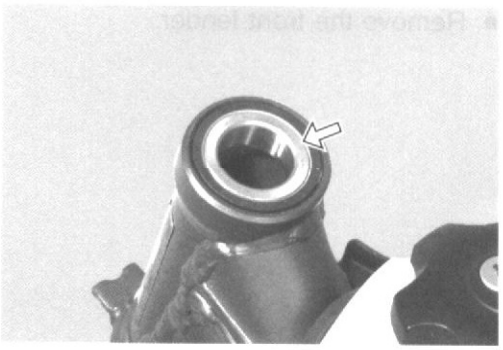
TOOL **09940-14911: Steering nut socket wrench**
09940-14960: Steering nut wrench socket

- Remove the steering stem lower bracket.

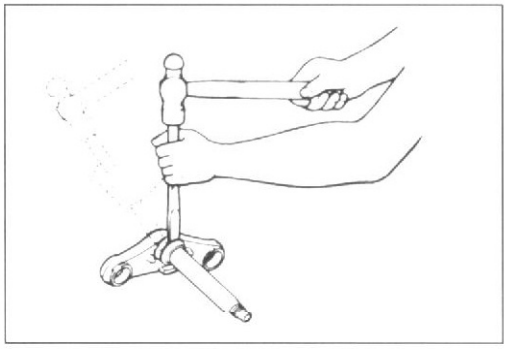
NOTE:
Hold the steering stem lower bracket to prevent it from falling.



- Remove the steering stem upper bearing.



INSPECTION



Inspect the removed parts for the following abnormalities. If any damages are found, replace the respective part with a new one.

* Steering race wear and brinelling.
* Bearing wear or damage.
* Abnormal bearing noise.
* Distortion of steering stem or handlebar.

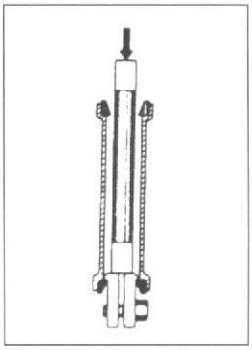
- Remove the steering stem lower bearing using a chisel.

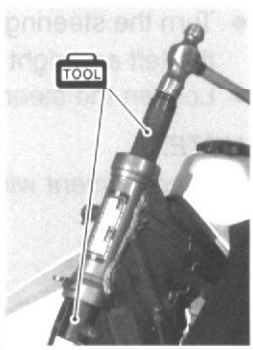
⚠ CAUTION

Replace the removed bearing with a new one.

- Drive out the steering stem upper and lower bearing races using the special tools.

TOOL 09941-54911: Bearing outer race remover
09941-74910: Bearing installer





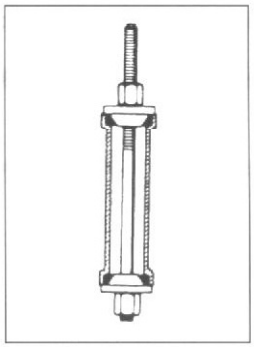
REASSEMBLY AND REMOUNTING

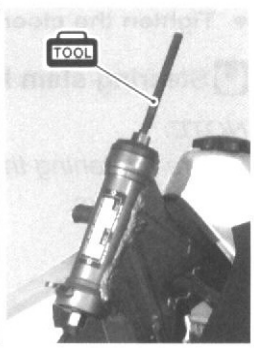
Reassemble and remount the steering stem in the reverse order of removal and disassembly. Pay attention to the following points.

BEARING RACES

- Press in the upper and lower bearing races using the special tools.

TOOL 09924-84510: Bearing installer set
09941-34513: Steering race installer

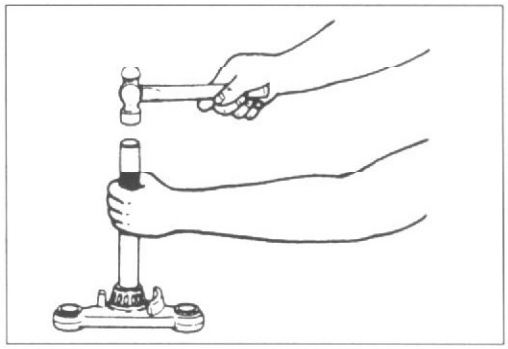




BEARINGS

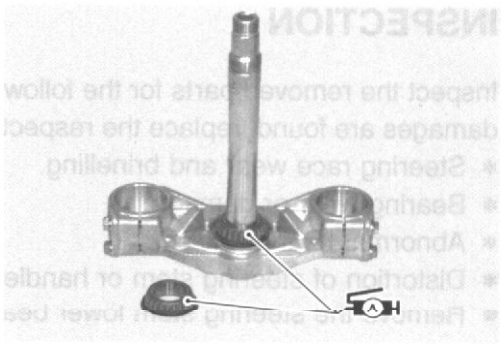
- Press in the steering stem lower bearing using the special tool.

TOOL 09925-18010: Steering bearing installer



- Apply SUZUKI SUPER GREASE "A" to the steering stem upper and lower bearings.

For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"

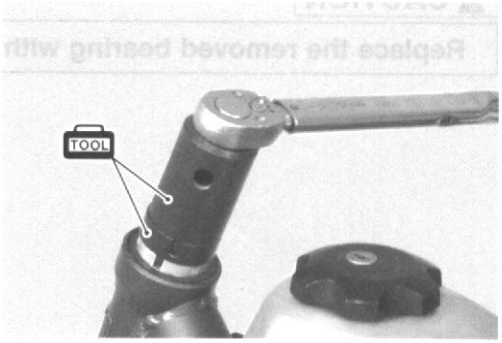


STEERING STEM

- Tighten the steering stem nut to the specified torque using the special tools.

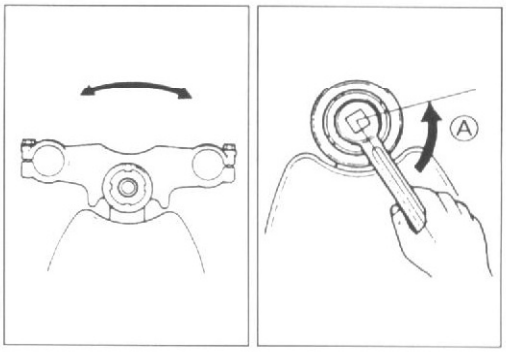
09940-14911: Steering nut socket wrench
09940-14960: Steering nut wrench socket

Steering stem nut: 45 N·m (4.5 kgf-m, 32.5 lb-ft)



- Turn the steering stem lower bracket about five or six times to the left and right so that the bearings seat properly.
- Loosen the steering stem nut 1/4-1/2 of a turn Ⓐ.

NOTE:
This adjustment will vary from motorcycle to motorcycle.



- Tighten the steering stem head nut to the specified torque.

Steering stem head nut: 90 N·m (9.0 kgf-m, 65.0 lb-ft)

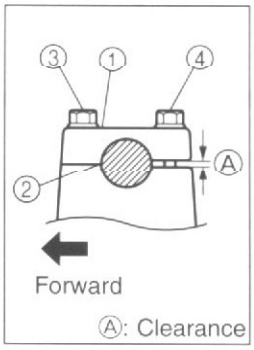
NOTE:
Before tightening the steering stem head nut, temporarily install the front forks.

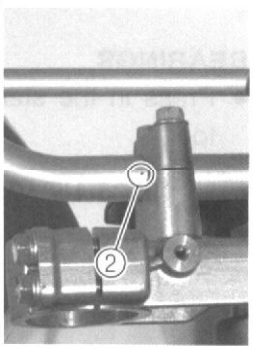
HANDLEBAR

When setting the handlebar clamp to the handlebar holder of the steering upper bracket, face the punched mark ① on its clamp forward.

- Set the handlebar to match its punched mark ② to the mating face of the handlebar clamp.
- First, tighten the handlebar clamp bolts ③ to the half of specified torque, and then tighten the handlebar clamp bolts ③ and ④ to the specified torque.

Handlebar clamp bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

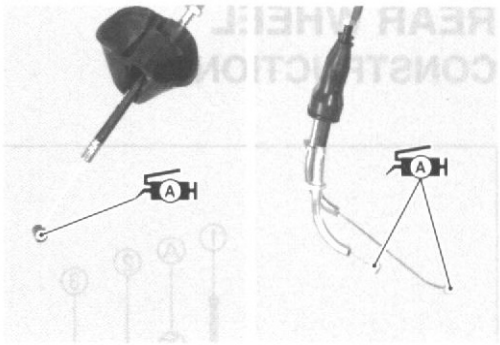




CLUTCH CABLE AND THROTTLE CABLES

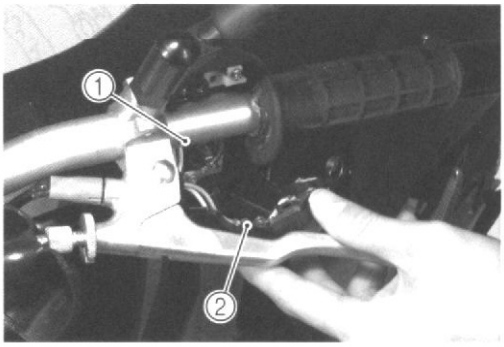
- Apply SUZUKI SUPER GREASE "A" to the end of clutch cable and throttle cables.

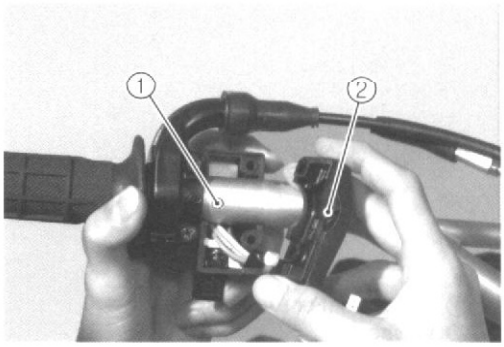
For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"



HANDLEBAR SWITCHES

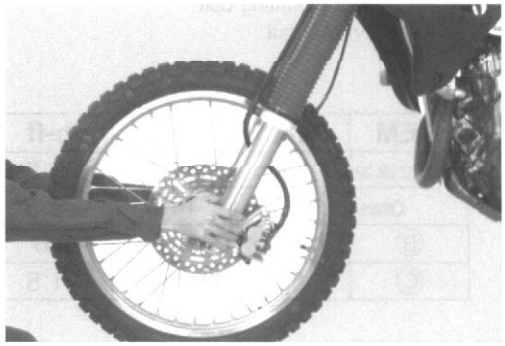
- Align the grooves ① on the handlebar with the lugs ② on the handlebar switches.





FRONT WHEEL ..... ☞ 6-9
WIRE HARNESS, CABLE, AND HOSE ROUTING ..... ☞ 8-12 to 8-20

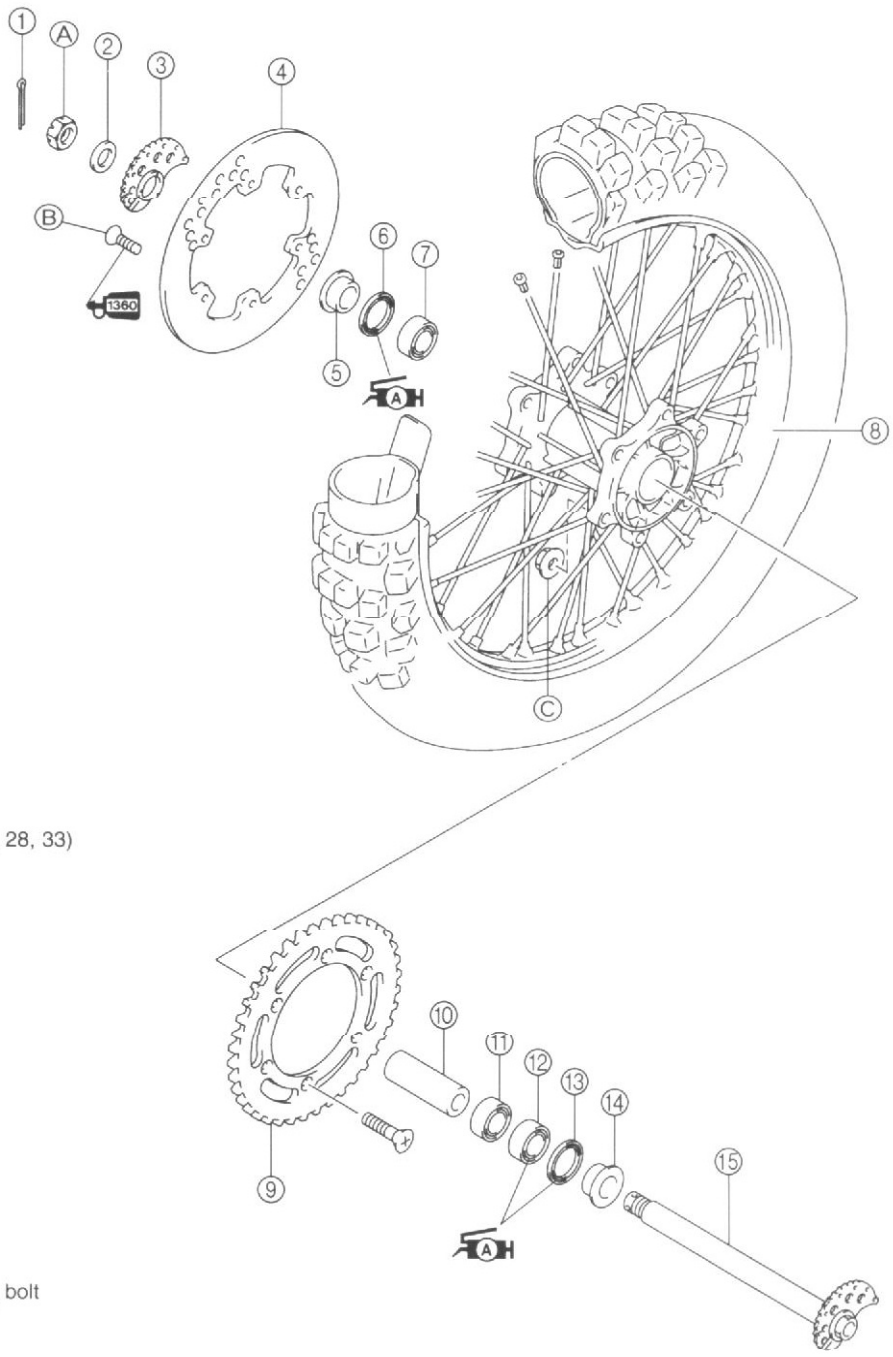
NOTE:
Hold the front fork legs, move them back and forth and make sure that the steering is not loose.



⚠ CAUTION

After performing the adjustment and installing the handlebars, "rock" the front wheel assembly forward and backward to ensure that there is no play and that the procedure was accomplished correctly. Finally, check to make sure that the steering stem moves freely from left to right with its own weight. If play or stiffness is noticeable, readjust the steering stem nut.

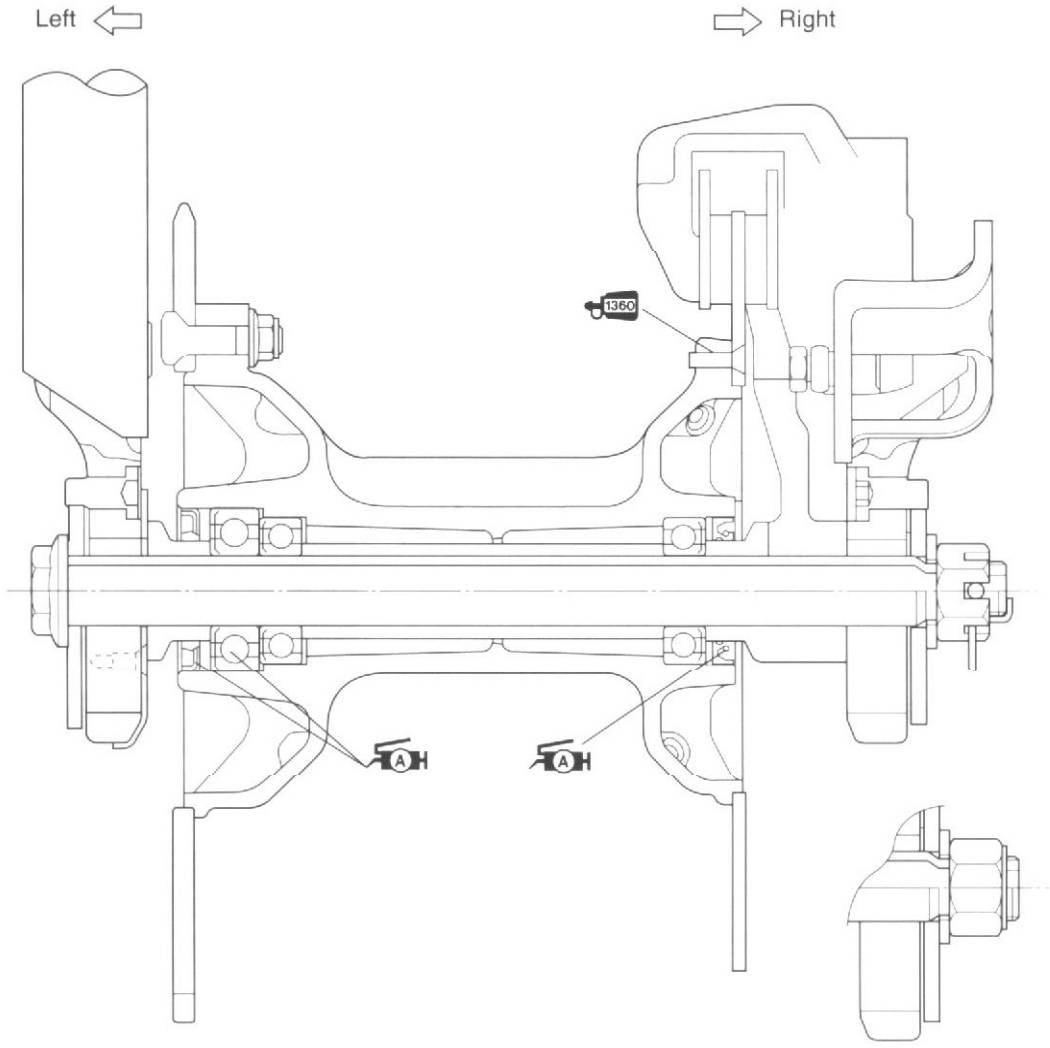
REAR WHEEL
CONSTRUCTION



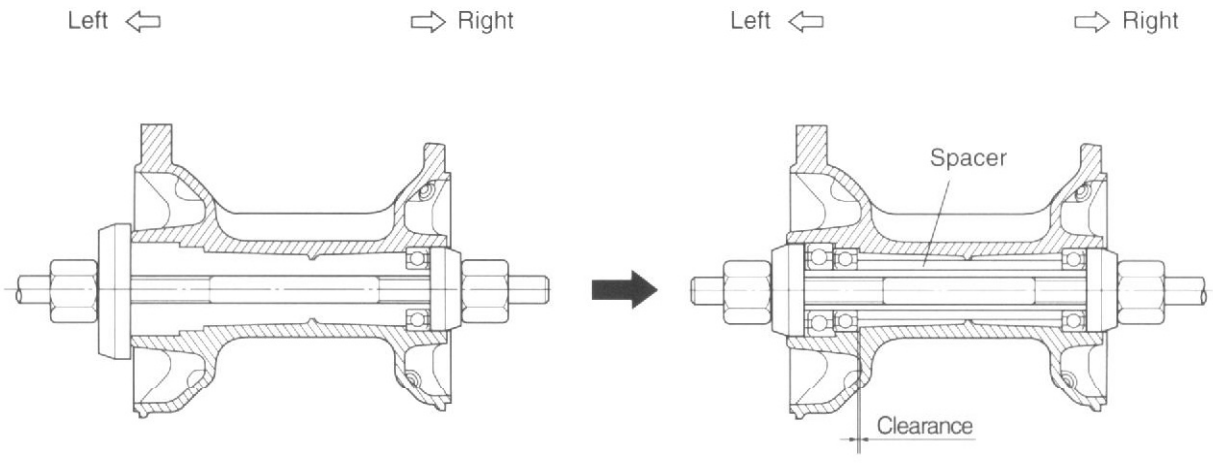
① Cotter pin (For E-03, 28, 33)
② Washer
③ Chain adjuster
④ Brake disc
⑤ Spacer
⑥ Dust seal
⑦ Bearing
⑧ Rear wheel
⑨ Rear sprocket
⑩ Spacer
⑪ Bearing
⑫ Bearing
⑬ Dust seal
⑭ Spacer
⑮ Rear axle

Ⓐ Rear axle nut
Ⓑ Brake disc mounting bolt
Ⓒ Rear sprocket nut

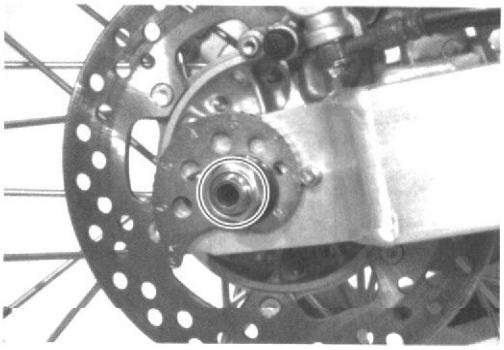
ITEM	N·m	kgf-m	lb-ft
Ⓐ E-03, 28, 33	100	10.0	72.5
Others	110	11.0	75.5
Ⓑ	10	1.0	7.0
Ⓒ	30	3.0	21.5



(Except E-03, 28, 33)



REMOVAL AND DISASSEMBLY

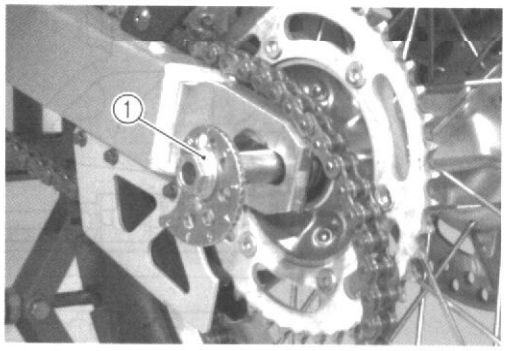


- Remove the cotter pin. (For E-03, 28, 33)
- Remove the rear axle nut.

⚠ CAUTION

Replace the removed cotter pin with a new one.

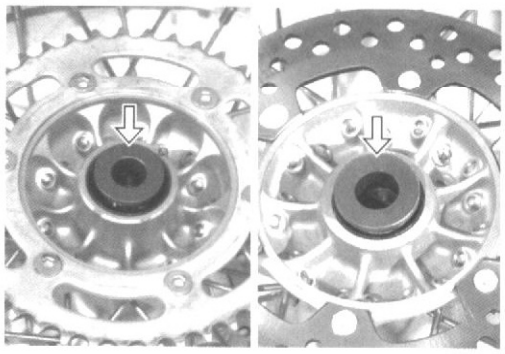
- Support the motorcycle with a jack or wooden block and remove the rear axle ① and rear wheel.



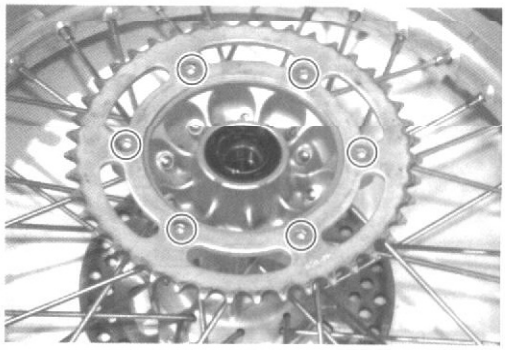
⚠ CAUTION

Do not operate the brake pedal during or after rear wheel removal.

- Remove the spacers.



- Remove the rear sprocket.

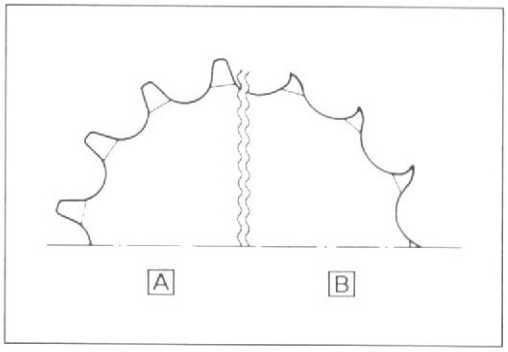


- Remove the brake disc.

INSPECTION

REAR SPROCKET

Inspect the rear sprocket for wear and damage. If any damages are found, replace the sprocket and drive chain as a set.



[A] Normal wear
[B] Excessive wear

WHEEL HUB DUST SEALS ..... ☞ 6-6
WHEEL BEARINGS ..... ☞ 6-6 and 6-7
REAR WHEEL ..... ☞ 6-7
REAR AXLE ..... ☞ 6-7

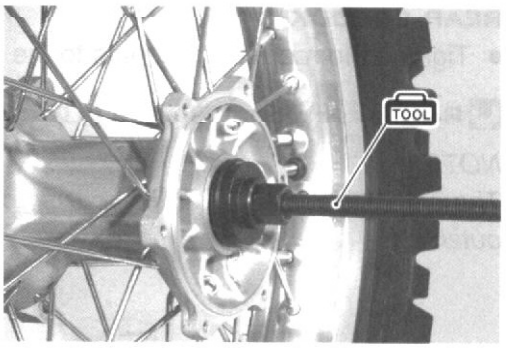
REASSEMBLY AND REMOUNTING

Reassemble and remount the front wheel in the reverse order of removal and disassembly. Pay special attention to the following points:

WHEEL BEARINGS

- Apply SUZUKI SUPER GREASE "A" to the left wheel bearing.

For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"



- Install the wheel bearings using the special tool.

09941-34513: Bearing installer set

⚠ CAUTION

First, install the right wheel bearing, and then install the left wheel bearings. The sealed cover on the wheel bearing must face out. (☞ 6-25)

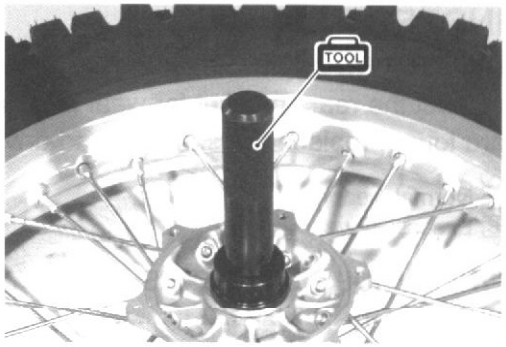
WHEEL HUB DUST SEALS

- Apply SUZUKI SUPER GREASE "A" to the wheel hub dust seals.

For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"

- Install the wheel hub dust seals using the special tool.

09913-70210: Bearing installer set

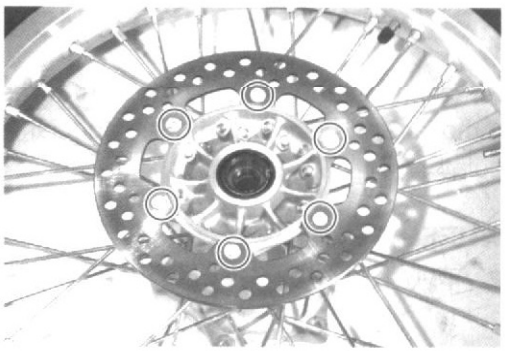


BRAKE DISC

- Make sure that the brake disc is clean and free of any grease. Apply THREAD LOCK SUPER "1360" to the brake disc mounting bolts, and then tighten them to the specified torque.

99000-32130: THREAD LOCK SUPER "1360"

Brake disc mounting bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)

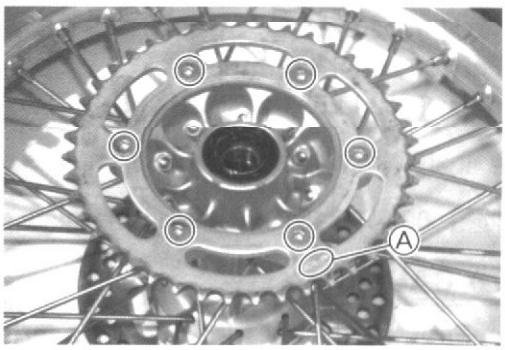


REAR SPROCKET

- Tighten the rear sprocket nuts to the specified torque.

Rear sprocket nut: 30 N·m (3.0 kgf-m, 21.5 lb-ft)

NOTE:
The stamped mark Ⓐ on the rear sprocket should face to the outside.

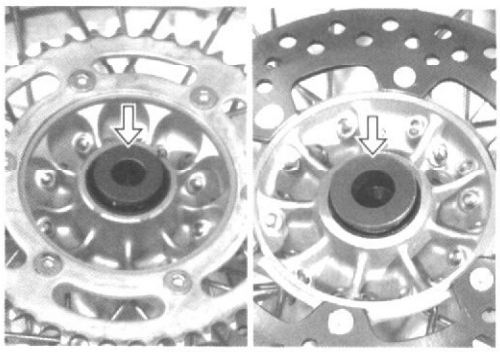


SPACERS

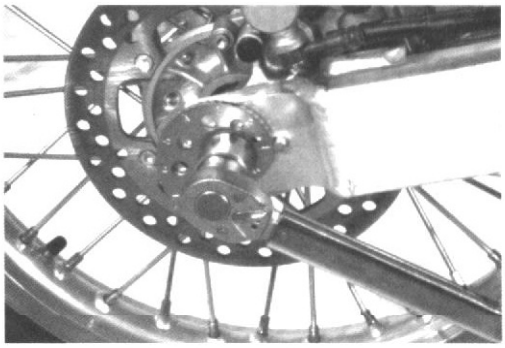
- Install the spacers.

⚠ CAUTION

After installing the right and left spacers, make sure that the dust seals lips are properly positioned.



REAR WHEEL



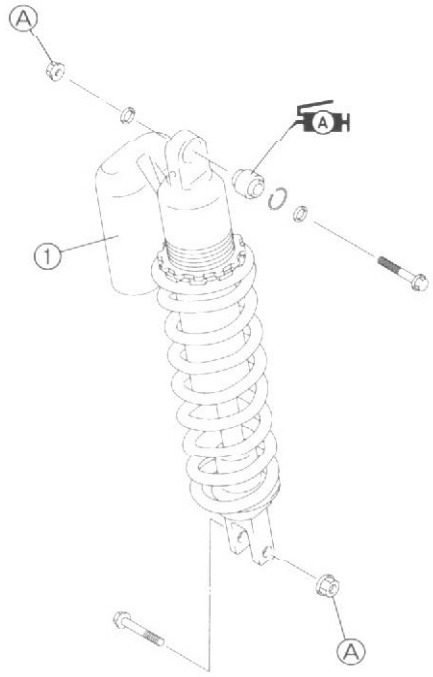
- Adjust the drive chain slack after installing the rear wheel axle. (☞ 2-16 and 2-17)
- Tighten the rear axle nut to the specified torque.

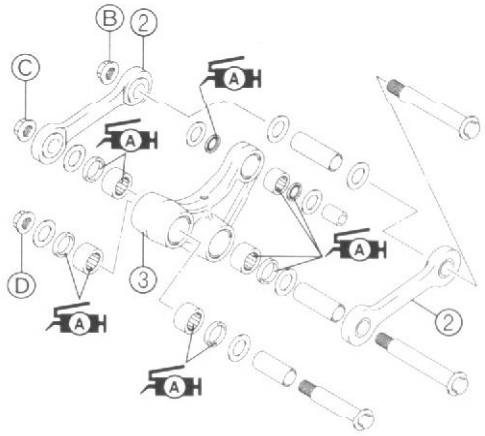
Rear axle nut:
100 N·m (10.0 kgf-m, 72.5 lb-ft).. For E-03, 28, 33
110 N·m (11.0 kgf-m, 79.5 lb-ft).. For the other countries

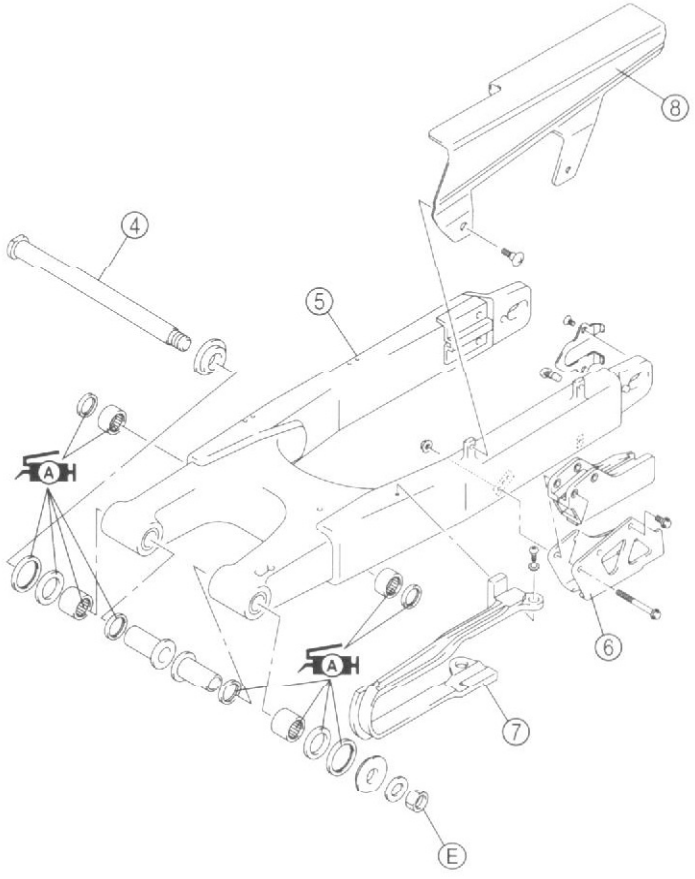
NOTE:

* *After installing the rear axle nut, insert a new cotter pin into the rear axle. (For E-03, 28, 33)*
* *After remounting the rear wheel, pump the brake pedal a few times to check for proper brake operation.*

REAR SUSPENSION
CONSTRUCTION



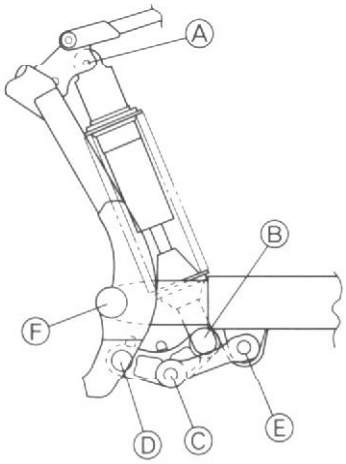


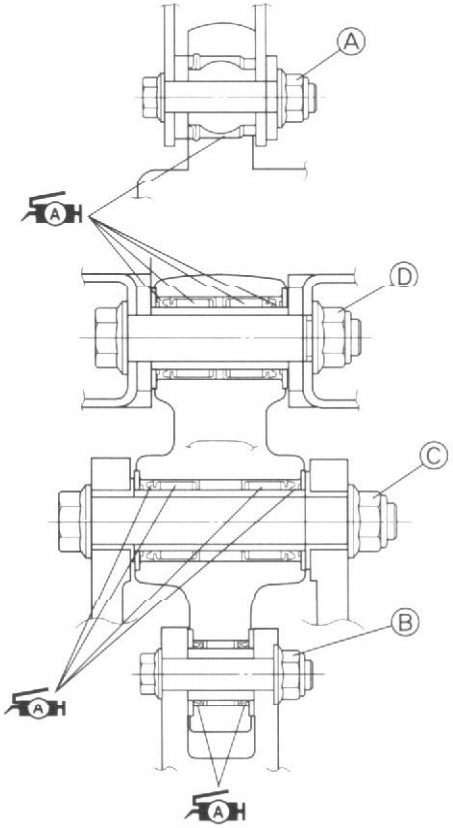


① Rear shock absorber
② Cushion lever rod
③ Cushion lever
④ Swingarm pivot shaft
⑤ Swingarm
⑥ Chain guide
⑦ Chain buffer
⑧ Chain case

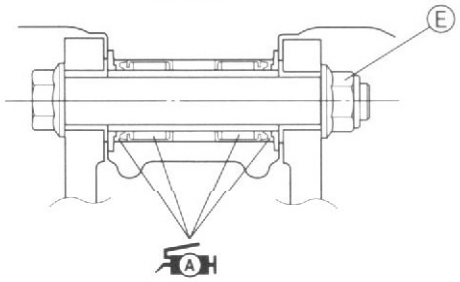
Ⓐ Rear shock absorber nut
Ⓑ Cushion rod mounting nut
Ⓒ Cushion lever mounting nut
Ⓓ Cushion lever mounting nut
Ⓔ Swingarm pivot nut

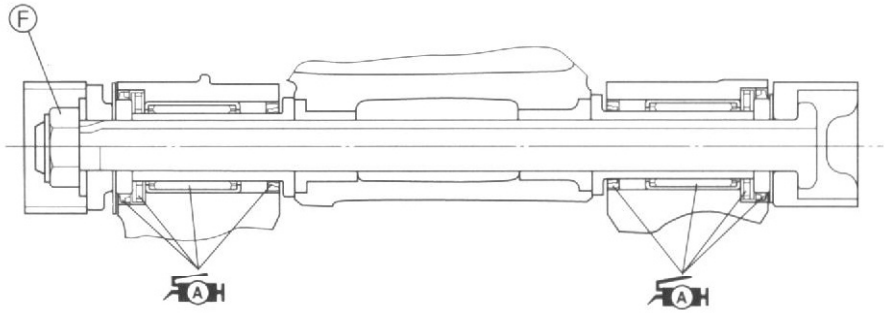
ITEM	N·m	kgf-m	lb-ft
Ⓐ	55	5.5	40.0
Ⓑ, Ⓒ, Ⓓ	100	10.0	72.5
Ⓔ	77	7.7	55.5





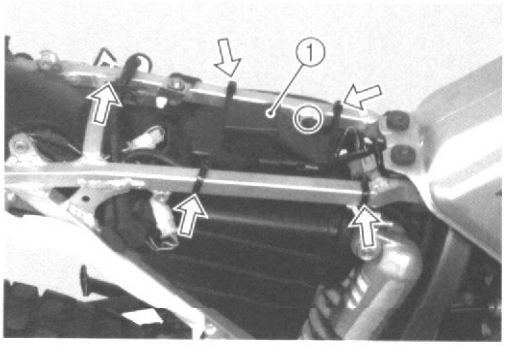
ITEM	N·m	kgf-m	lb-ft
Ⓐ	55	5.5	40.0
Ⓑ	55	5.5	40.0
Ⓒ	100	10.0	72.5
Ⓓ	100	10.0	72.5
Ⓔ	100	10.0	72.5
Ⓕ	77	7.7	55.5



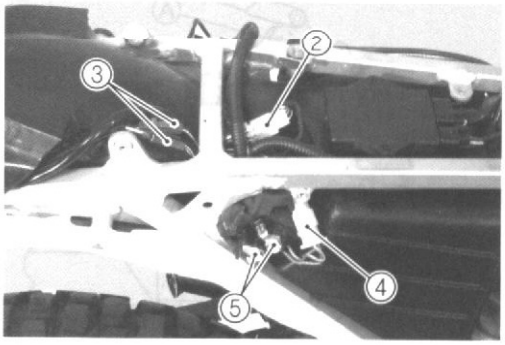


REAR SHOCK ABSORBER REMOVAL

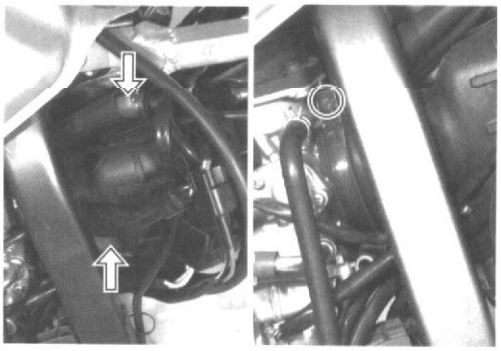
- Remove the muffler. (☞ 3-5)
- Remove the battery. (☞ 7-34)
- Remove the clamps and CDI unit cover ①.



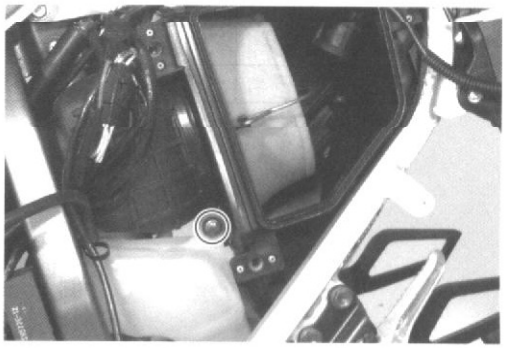
- Disconnect the brake light/taillight coupler ②, left and right turn signal light couplers ③, starter relay coupler ④, and starter relay lead wires ⑤.



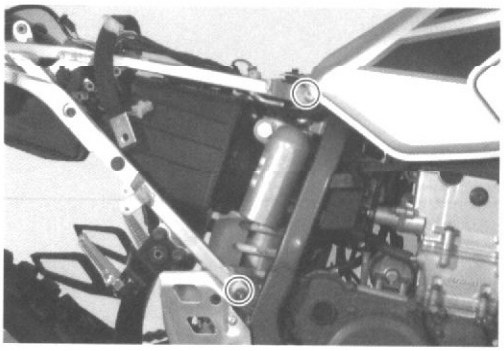
- Disconnect the air cleaner breather hoses and loosen the carburetor clamp.



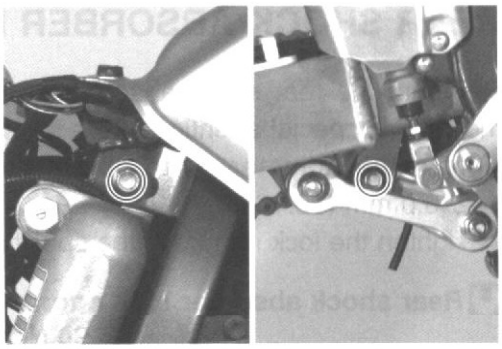
- Remove the overflow tank mounting bolt.



- Remove the seat rail with air cleaner case assembly.



- Support the motorcycle with a jack or wooden block and remove the rear shock absorber.



REAR SHOCK ABSORBER INSPECTION

Inspect the rear shock absorber for damage and oil leakage. If any damages are found, replace the rear shock absorber with a new one.

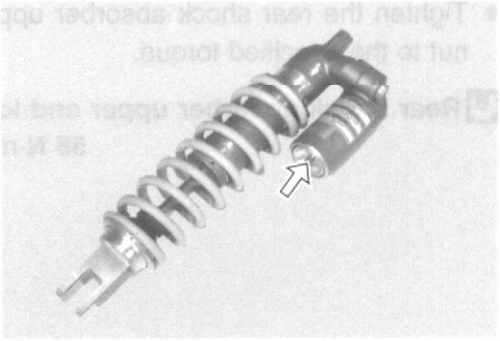
⚠ CAUTION

Do not attempt to disassemble the rear shock absorber. It is unserviceable.

REAR SHOCK ABSORBER DISPOSAL

⚠ WARNING

- *** The rear shock absorber unit contains high-pressure nitrogen gas.**
- *** Mishandling can cause explosion.**
- *** Keep away from fire and heat. High gas pressure caused by heat can cause an explosion.**
- *** Release gas pressure before disposing.**



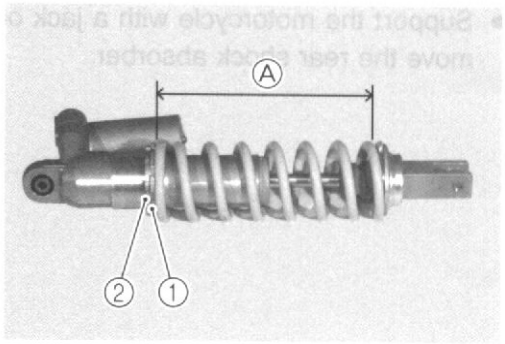
GAS PRESSURE RELEASE

- Remove the valve cap.
- Press the valve with a screwdriver to bleed out the nitrogen gas.

⚠ WARNING

- *** Releasing high pressure gas from the rear shock absorber unit can be hazardous. Never perform any servicing until the nitrogen gas pressure has been released from the rear shock absorber unit.**
- *** When releasing the gas pressure, place a rag over the gas valve and use the tip of a screwdriver to press the valve. Do not use your finger to depress the gas valve, and be sure to direct the valve away from your face and body.**
- *** Be sure to always wear eye protection when performing this procedure.**

REAR SHOCK ABSORBER REMOUNTING



Remount the rear shock absorber in the reverse order of removal. Pay special attention to the following points:

- Turn the adjuster ① to obtain the spring length Ⓐ of 258.0 mm (10.16 in).
- Tighten the lock ring ② to the specified torque.

Rear shock absorber lock ring:
90 N·m (9.0 kgf-m, 65.0 lb-ft)

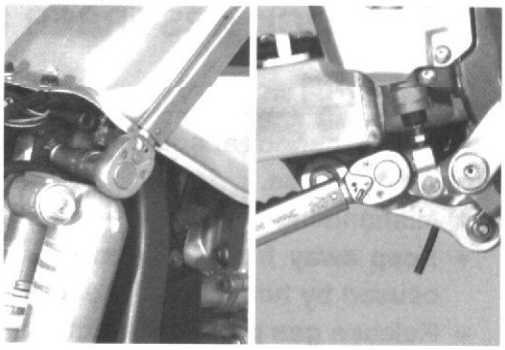
SPRING SETTING TABLE

Spring preset length		
Standard	Soft	Hard
258.0 mm (10.16 in)	259.5 mm (10.22 in)	247.5 mm (9.74 in)

⚠ CAUTION

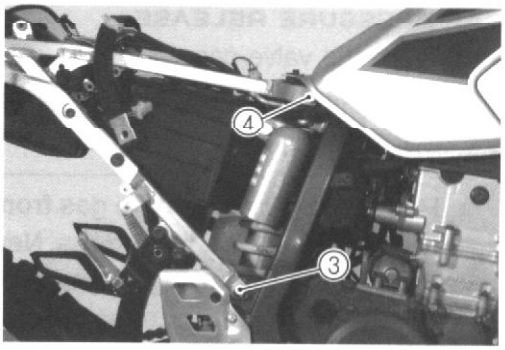
Do not set the spring less than 247.5 mm (9.74 in).

- Tighten the rear shock absorber upper and lower mounting nut to the specified torque.



Rear shock absorber upper and lower mounting nut:
55 N·m (5.5 kgf-m, 40.0 lb-ft)

- Apply THREAD LOCK SUPER "1303" to the seat rail lower mounting bolts ③.



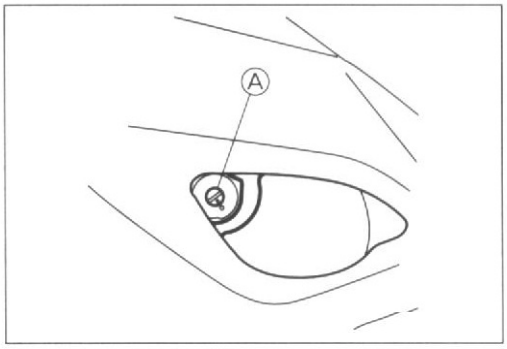
99000-32030: THREAD LOCK SUPER "1303"

- Tighten the seat rail lower mounting bolts ③ and upper mounting nut ④ to the specified torque.

Seat rail lower mounting bolt:
35 N·m (3.5 kgf-m, 25.5 lb-ft)

Seat rail upper mounting nut:
35 N·m (3.5 kgf-m, 25.5 lb-ft)

REAR SHOCK ABSORBER DAMPING FORCE ADJUSTMENT

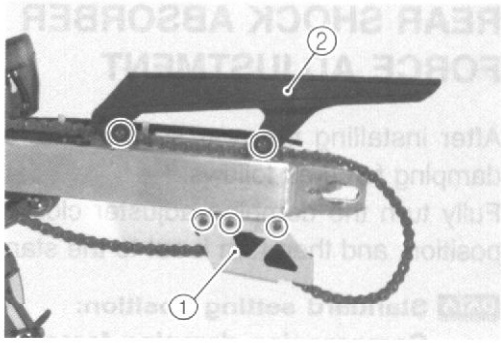


After installing the rear suspension, adjust the compression damping force as follows.
Fully turn the damping adjuster clockwise to the hard setting position, and then turn it out to the standard setting position.

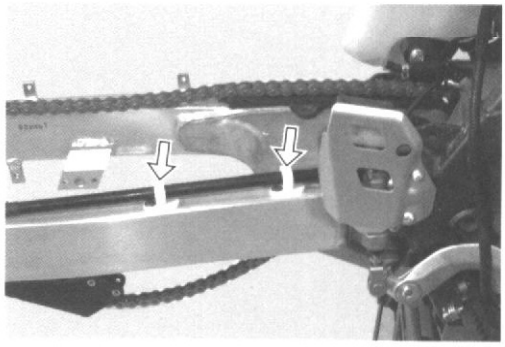
DATA Standard setting position:
Compression damping force adjuster Ⓐ:
11 clicks out

REAR SWINGARM AND CUSHION LEVER REMOVAL

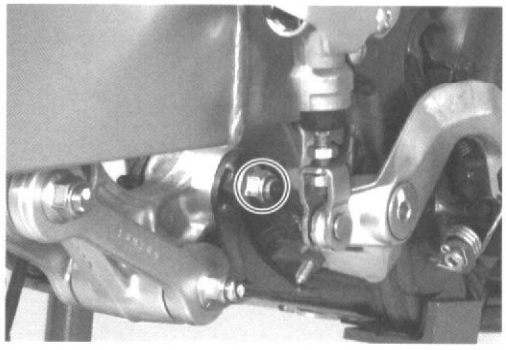
- Remove the rear wheel. (☞ 6-26)
- Remove the rear shock absorber. (☞ 6-32 and 6-33)
- Remove the rear brake caliper. (☞ 6-53)
- Remove the drive chain guide ① and chain case ②.



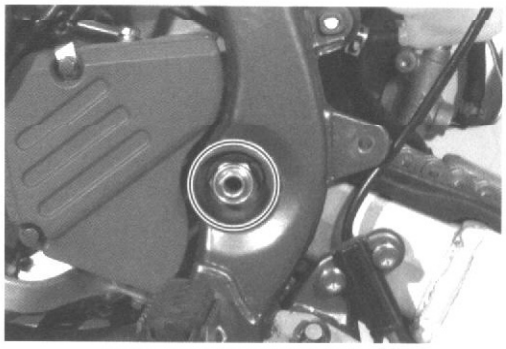
- Disconnect the brake hose from the brake hose guide.



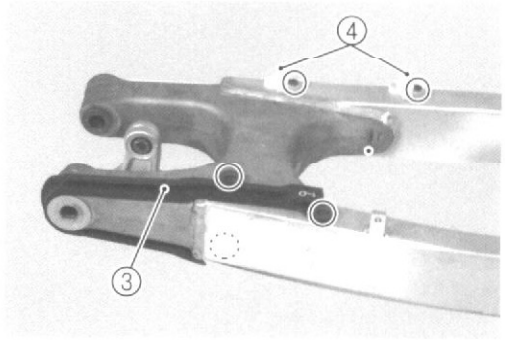
- Remove the cushion lever mounting bolt and nut.



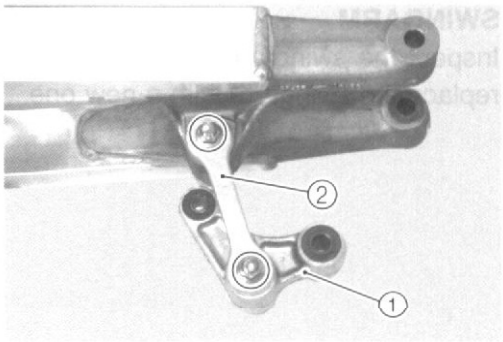
- Remove the swingarm pivot shaft nut and pivot shaft.
- Remove the rear suspension assembly.



- Remove the chain buffer ③ and brake hose guides ④.



- Remove the cushion lever ① and cushion lever rods ②.

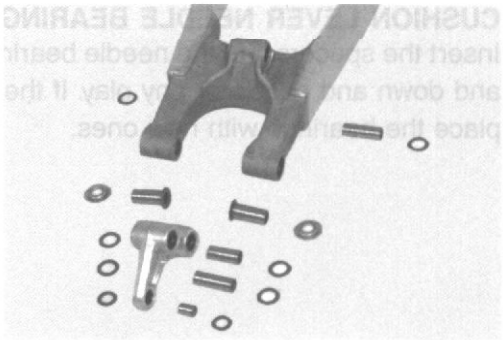


INSPECTION AND DISASSEMBLY

SPACERS

- Remove the dust seals, washers and spacers from the swingarm and cushion lever.

Inspect the spacers for any flaws or other damage. If any damages are found, replace the spacers with new ones.

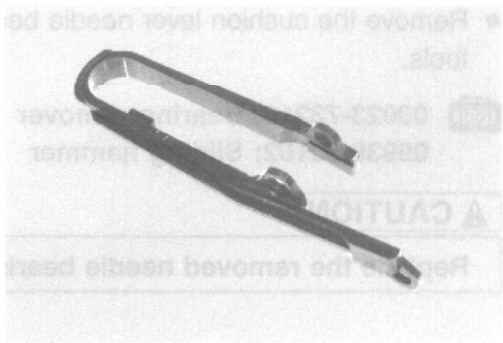


⚠ CAUTION

Replace the removed dust seals with new ones.

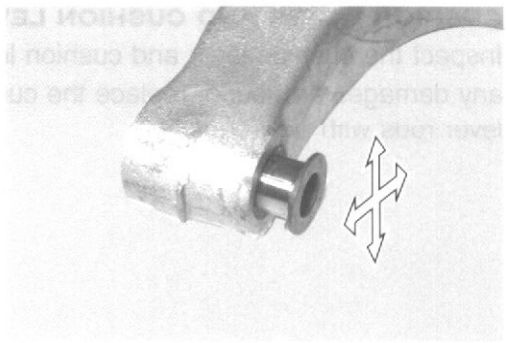
CHAIN BUFFER

Inspect the chain buffer for wear and damage. If any damages are found, replace the chain buffer with a new one.



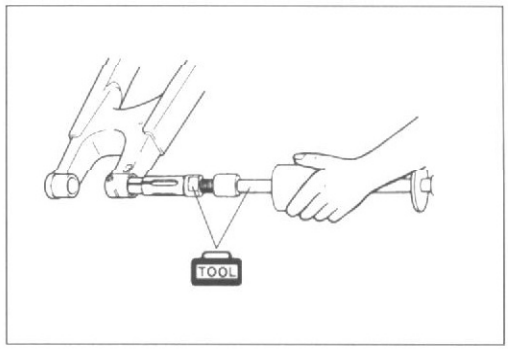
SWINGARM NEEDLE BEARINGS

Insert the spacers into the needle bearings, move the spacer up and down and check for any play. If there is excessive play, replace the bearings with new ones.



- Remove the swingarm needle bearings using the special tools.

TOOL **09923-74510: Bearing remover**
09930-30102: Sliding hammer

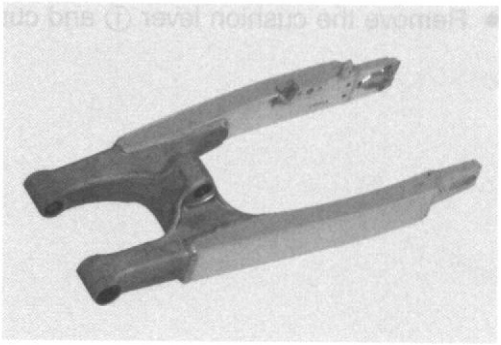


⚠ CAUTION

Replace the removed needle bearings with new ones.

SWINGARM

Inspect the swingarm for damage. If any damages are found, replace the swingarm with a new one.



CUSHION LEVER NEEDLE BEARINGS

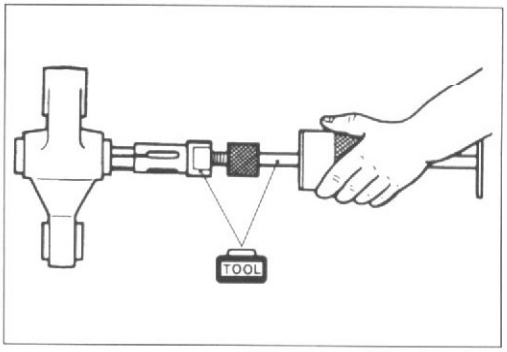
Insert the spacers into the needle bearings, move the spacer up and down and check for any play. If there is excessive play, replace the bearings with new ones.

- Remove the cushion lever needle bearings using the special tools.

TOOL **09923-73210: Bearing remover**
09930-30102: Sliding hammer

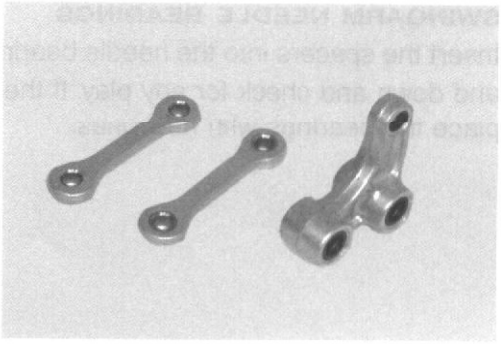
⚠ CAUTION

Replace the removed needle bearings with new ones.



CUSHION LEVER AND CUSHION LEVER RODS

Inspect the cushion lever and cushion lever rods for damage. If any damages are found, replace the cushion lever and cushion lever rods with new ones.

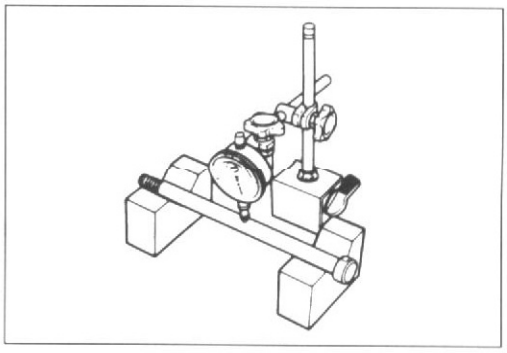


PIVOT SHAFT

Measure the pivot shaft runout using the dial gauge. If the runout exceeds the service limit, replace the pivot shaft.

TOOL **09900-20606: Dial gauge (1/100 mm)**
09900-20701: Magnetic stand
09900-21304: V-block set (100 mm)

DATA **Swingarm pivot shaft runout**
Service Limit: 0.3 mm (0.01 in)



REASSEMBLY AND REMOUNTING

Reassemble and remount the rear suspension in the reverse order of removal and disassembly. Pay special attention to the following points:

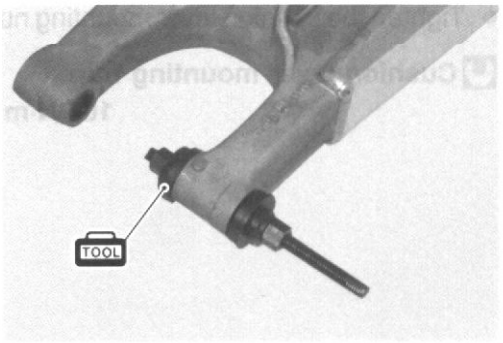
SWINGARM NEEDLE BEARINGS

- Apply SUZUKI SUPER GREASE "A" to the spacers, dust seals and needle bearings.

For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"

- Press the needle bearings into the swingarm pivot using the special tool.

09941-34513: Steering outer race installer



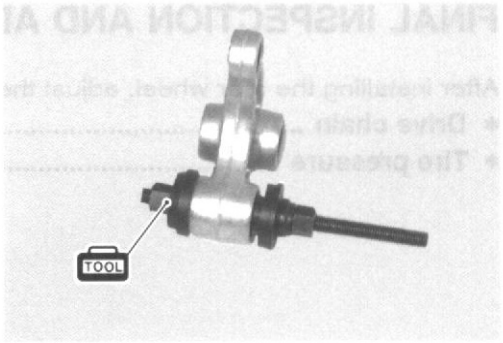
CUSHION LEVER NEEDLE BEARINGS

- Apply SUZUKI SUPER GREASE "A" to the spacers and needle bearings.

For USA
99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
99000-25010: SUZUKI SUPER GREASE "A"

- Press the needle bearings into the cushion lever using the special tool.

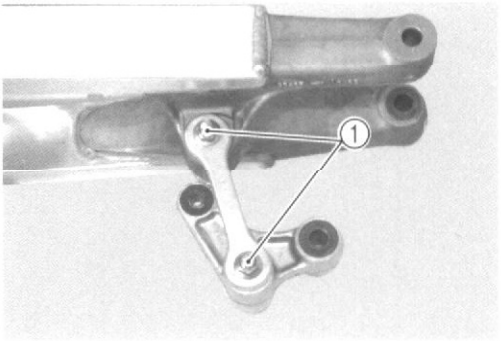
09941-34513: Steering outer race installer



REAR SUSPENSION

- Tighten the cushion lever rod mounting nuts ① to the specified torque.

Cushion lever rod mounting nut:
100 N·m (10.0 kgf·m, 72.5 lb-ft)

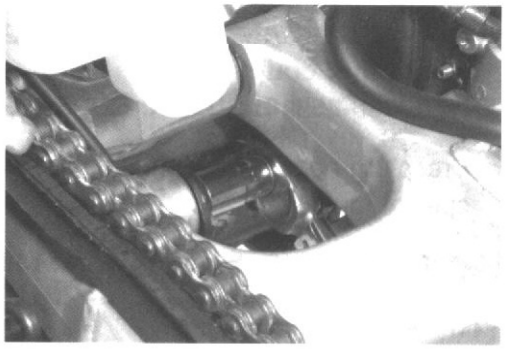


- Tighten the swingarm pivot shaft nut to the specified torque.

Pivot shaft nut: 77 N·m (7.7 kgf-m, 55.5 lb-ft)

- Tighten the cushion lever mounting nut to the specified torque.

Cushion lever mounting nut:
100 N·m (10.0 kgf·m, 72.5 lb-ft)



FINAL INSPECTION AND ADJUSTMENT

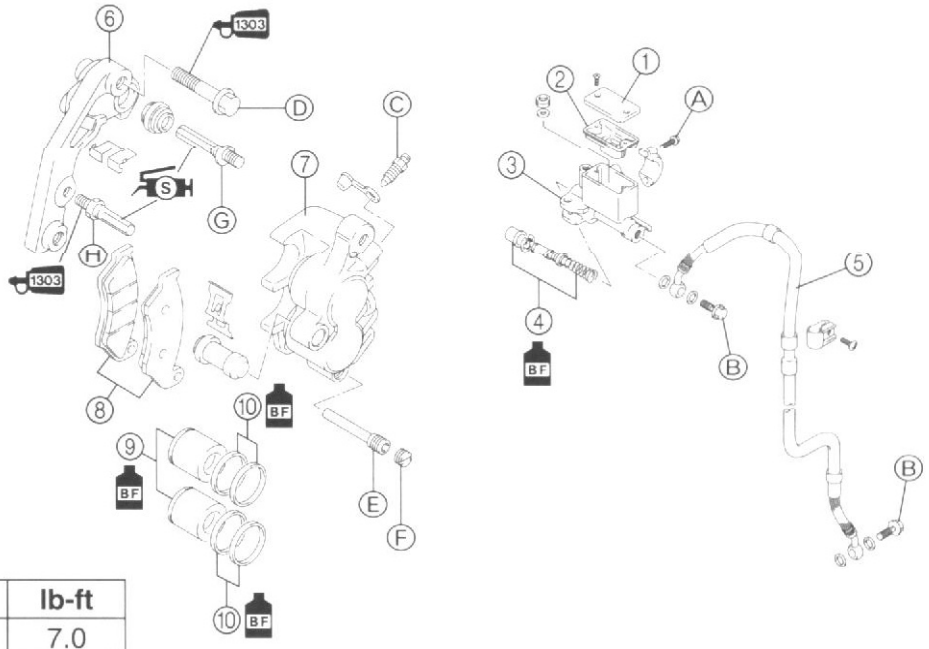
After installing the rear wheel, adjust the following before riding.

* **Drive chain** ..... ☞ 2-16 to 2-17
* **Tire pressure** ..... ☞ 2-22

FRONT BRAKE
CONSTRUCTION

① Cap
② Diaphragm
③ Master cylinder
④ Piston set
⑤ Brake hose
⑥ Caliper holder
⑦ Caliper
⑧ Pad set
⑨ Piston
⑩ Piston and dust seal

Ⓐ Master cylinder mounting bolt
Ⓑ Brake hose union bolt
Ⓒ Air bleeder valve
Ⓓ Brake caliper mounting bolt
Ⓔ Brake pad mounting pin
Ⓕ Plug
Ⓖ Caliper axle
Ⓗ Caliper axle



ITEM	N·m	kgf-m	lb-ft
Ⓐ	10	1.0	7.0
Ⓑ	23	2.3	16.5
Ⓒ	7.5	0.75	5.5
Ⓓ	26	2.6	19.0
Ⓔ	18	1.8	13.0
Ⓕ	2.5	0.25	1.8
Ⓖ	23	2.3	16.5
Ⓗ	13	1.3	9.5

⚠ WARNING

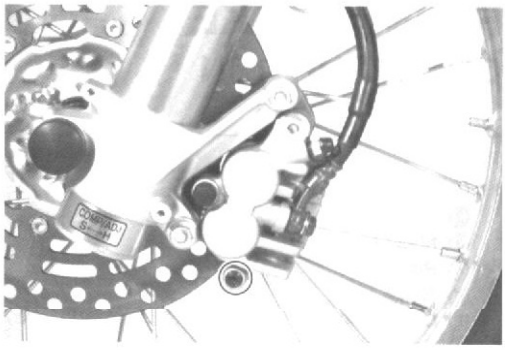
* **The brake system is filled with an glycol-based brake fluid, which is classified DOT 4. Do not use or mix other types of brake fluid, such as silicone-based and petroleum-based brake fluids when refilling the brake system, otherwise serious damage to the brake system will result.**
* **Do not use any brake fluid taken from old, used, or unsealed containers.**
* **Do not reuse brake fluid left over from the last servicing or which has been stored for a long period of time.**
* **When storing brake fluid, be sure to seal the container completely and keep it out of the reach of children.**
* **When replenishing brake fluid, be sure not to get any dust or other foreign materials in the fluid.**
* **When washing brake components, always use new brake fluid. Do not use cleaning solvent.**
* **A contaminated brake disc or brake pad reduces braking performance. Discard contaminated pads and clean the brake disc with high-quality brake cleaner or a neutral detergent.**

⚠ CAUTION

Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber material, etc.

BRAKE PAD REPLACEMENT

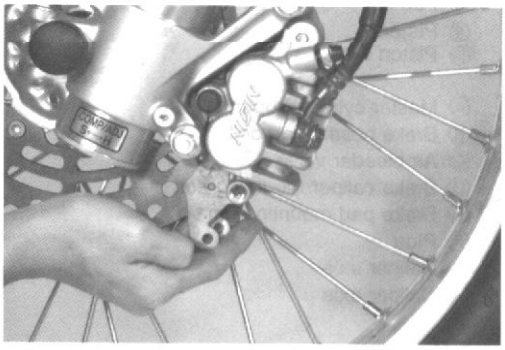
- Remove the brake pad mounting pin.



- Remove the brake pads.

⚠ CAUTION

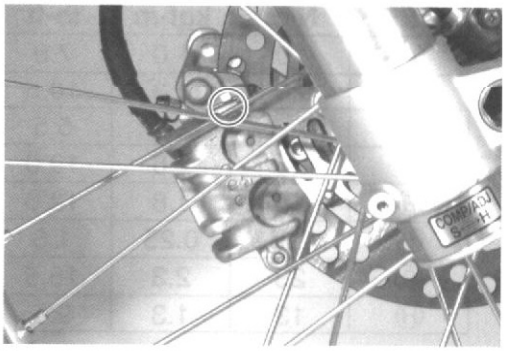
*** Do not operate the brake lever during or after brake pad removal.**
*** Replace the brake pads as a set, otherwise braking performance will be adversely affected.**



- Install the new brake pads.

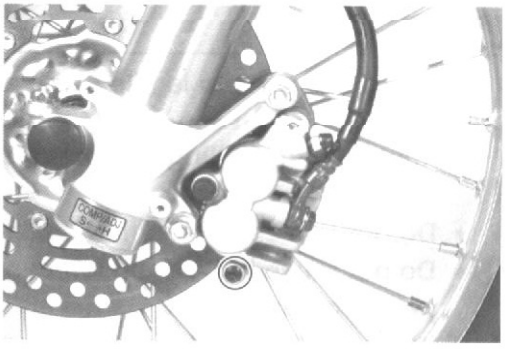
⚠ WARNING

Make sure that the brake pad is properly engaged with the guide plate as shown in the photograph.



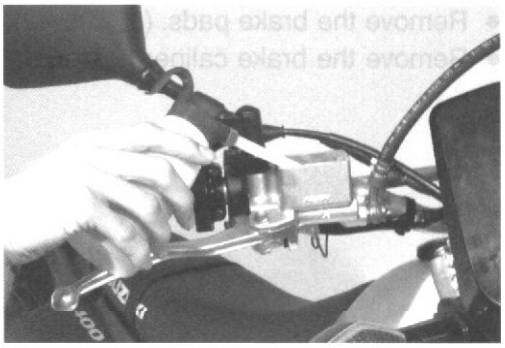
- Tighten the brake pad mounting pin to the specified torque.

Brake pad mounting pin: 18 N·m (1.8 kgf-m, 13.0 lb-ft)



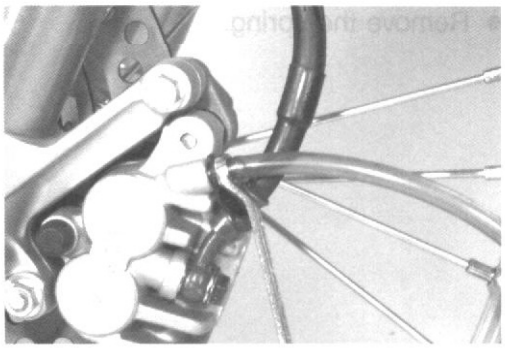
NOTE:
After replacing the brake pads, pump the brake lever a few times to check for proper brake operation and then check the brake fluid level.

BRAKE FLUID REPLACEMENT



- Place the motorcycle on a level surface and keep the handlebar straight.
- Remove the master cylinder reservoir cap and diaphragm.
- Remove as much old brake fluid as possible.
- Fill the reservoir with new brake fluid.

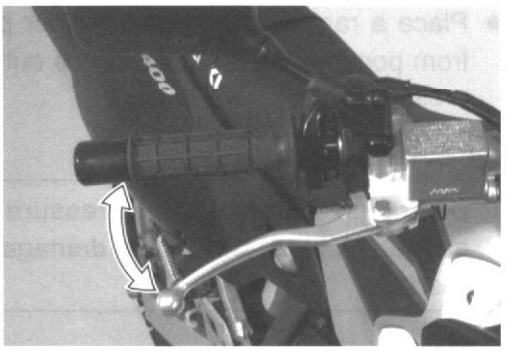
Specification and classification: DOT 4



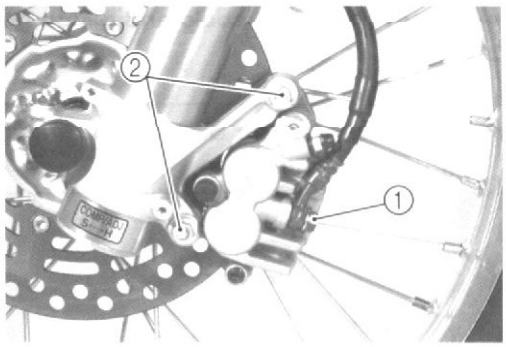
- Connect a clear hose to the air bleeder valve and insert the other end of the hose into a receptacle.
- Loosen the air bleeder valve and pump the brake lever until the old brake fluid is completely out of the brake system.
- Close the air bleeder valve and disconnect the clear hose. Fill the reservoir with new brake fluid to the upper end of the inspection window.

⚠ CAUTION

Bleed air from the brake system.
(☞ 2-19 and 2-20)



BRAKE CALIPER REMOVAL AND DISASSEMBLY



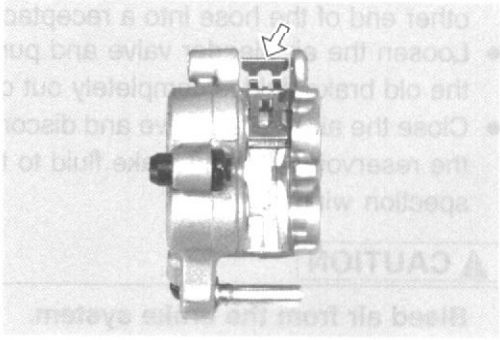
- Disconnect the brake hose from the brake caliper by removing the brake hose union bolt ① and allow the brake fluid to drain into a suitable receptacle.
- Remove the brake caliper by removing the brake caliper mounting bolts ②.

⚠ WARNING

- **Do not reuse the brake fluid left over from the last servicing or which has been stored for a long period of time, otherwise serious damage to the brake system will result.**
- **Brake fluid, if it leaks, will interfere with safe running and discolor painted surfaces. Check the brake hose and hose joints for cracks and oil leakage.**

- Remove the brake pads. (☞ 6-42)
- Remove the brake caliper holder.

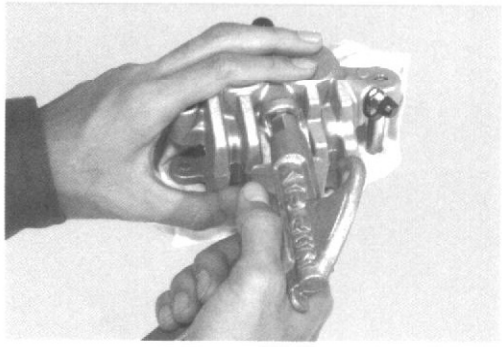
- Remove the spring.



- Place a rag over the brake caliper pistons to prevent them from popping out, and then force out the pistons using compressed air.

⚠ CAUTION

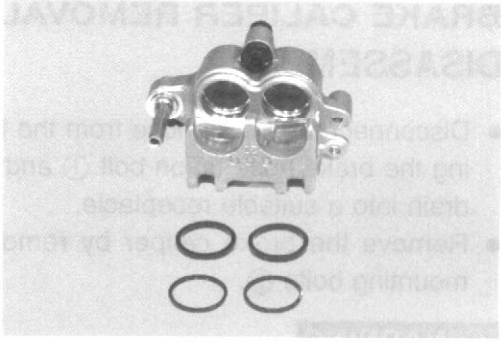
Do not use extremely high pressure to remove the brake caliper pistons, otherwise damage to the pistons will result.



- Remove the dust seals and piston seals.

⚠ CAUTION

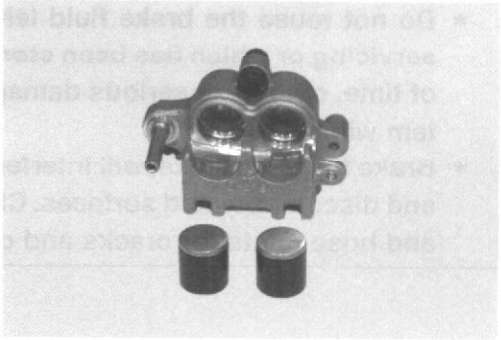
Do not reuse the dust seals and piston seals to prevent fluid leakage.



BRAKE CALIPER INSPECTION

BRAKE CALIPER

Inspect each brake caliper cylinder wall for nicks, scratches or other damage. If any damages are found, replace the brake caliper with a new one.

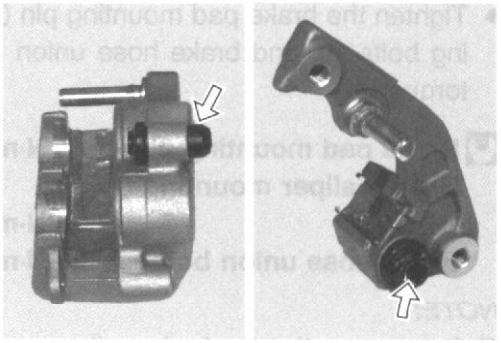


BRAKE CALIPER PISTONS

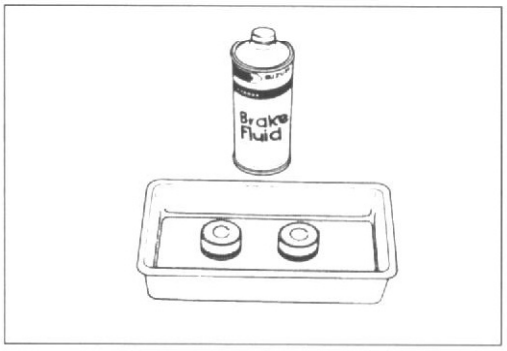
Inspect the brake caliper pistons for any scratches or other damage. If any damages are found, replace the piston with a new one.

RUBBER PARTS

Replace the removed rubber parts with new ones.



BRAKE CALIPER REASSEMBLY AND REMOUNTING



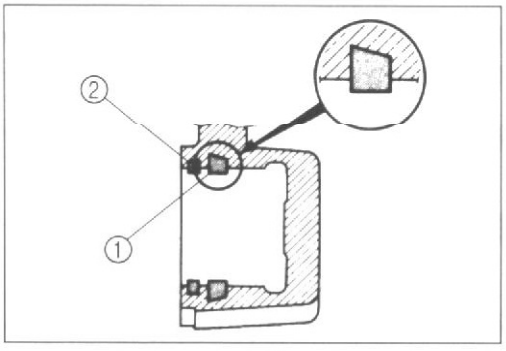
Reassemble and remount the brake caliper in the reverse order of removal and disassembly. Pay special attention to the following points:

- Wash the caliper bores and pistons with the specified brake fluid. Thoroughly wash the dust seal grooves and piston seal grooves.

BF Specification and classification: DOT 4

⚠ CAUTION

- *** Wash the brake caliper components with new brake fluid before reassembly.**
- *** Do not wipe the brake fluid off after washing the components.**
- *** When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.**
- *** Replace the removed piston seals and dust seals with new ones.**
- *** Apply brake fluid to all of the seals, brake caliper bores and pistons before reassembly.**



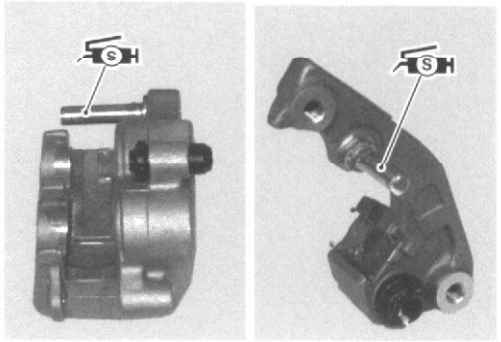
PISTON SEALS

- Install the piston seals ① and dust seals ② as shown.

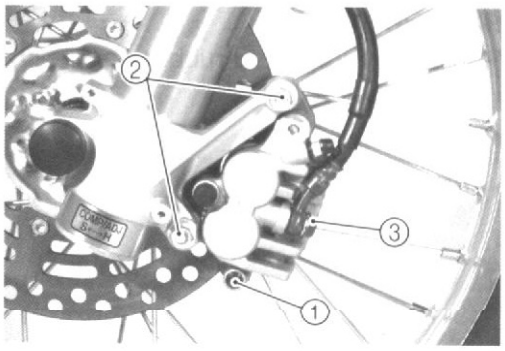
BRAKE CALIPER HOLDER

- Apply SUZUKI SILICON GREASE to the brake caliper holder.

S99000-25100: SUZUKI SILICONE GREASE



- Tighten the brake pad mounting pin ①, brake caliper mounting bolts ②, and brake hose union bolt ③ to the specified torque.



Brake pad mounting pin: 18 N·m (1.8 kgf-m, 13.0 lb-ft)
Brake caliper mounting bolt: 26 N·m (2.6 kgf-m, 19.0 lb-ft)
Brake hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

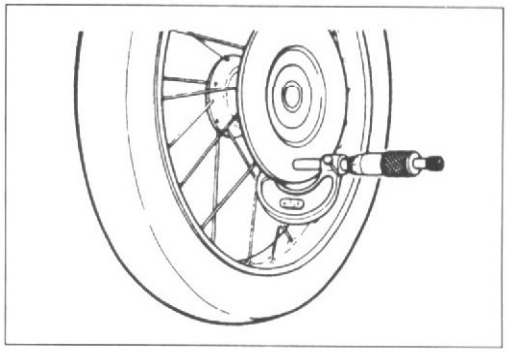
NOTE:
Before remounting the brake caliper, push the brake caliper pistons all the way into the caliper.

⚠ CAUTION

Bleed air from the system after reassembling the brake caliper. (☞ 2-19 and 2-20)

BRAKE DISC INSPECTION

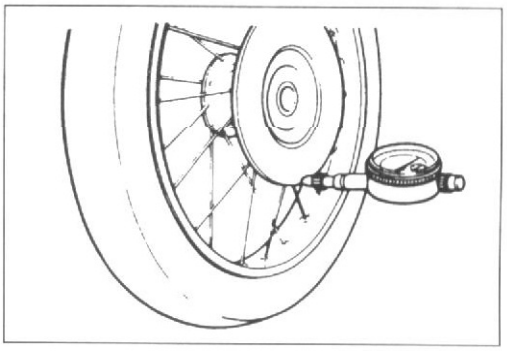
Check the brake disc for cracks or damage and measure the thickness using the micrometer. If any damages are found or if the thickness is less than the service limit, replace the brake disc with a new one.



TOOL 09900-20205: Micrometer (0 – 25 mm)

DATA Brake disc thickness
Service Limit: 2.5 mm (0.098 in)

Measure the runout using the dial gauge. If the runout exceeds the service limit, replace the brake disc with a new one.

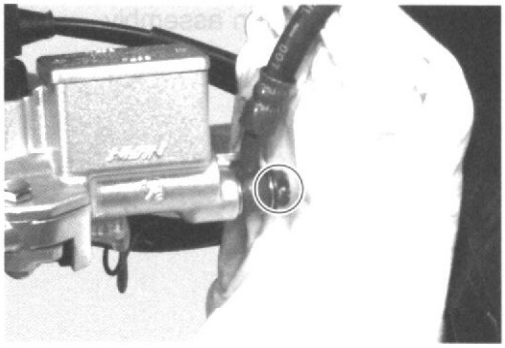


TOOL 09900-20606: Dial gauge (1/100 mm)
09900-20701: Magnetic stand

DATA Brake disc runout
Service Limit: 0.3 mm (0.012 in)

- If either measurement exceeds the service limit, replace the brake disc with a new one. (☞ 6-5)

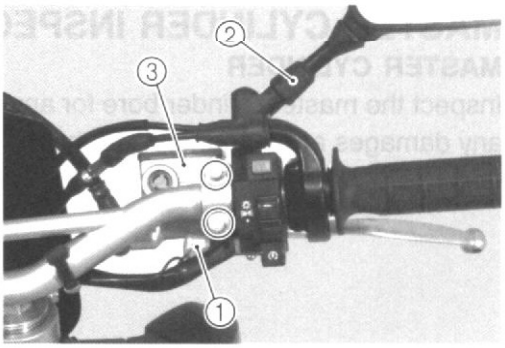
MASTER CYLINDER REMOVAL AND DISASSEMBLY



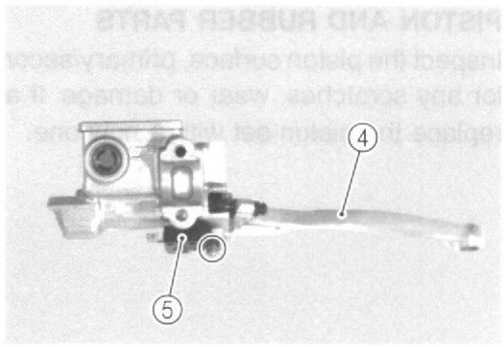
- Place a rag underneath the brake hose union bolt on the master cylinder to catch any spilt brake fluid. Remove the brake hose union bolt and disconnect the brake hose.

⚠ CAUTION

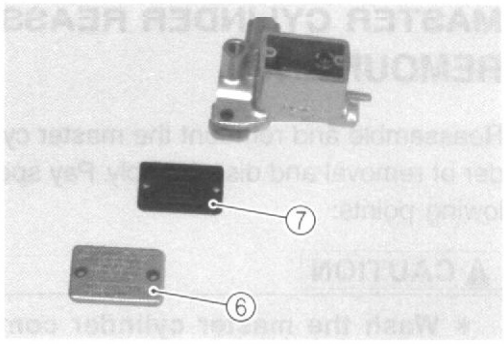
Immediately wipe off any brake fluid contacting any part of the motorcycle. The brake fluid reacts chemically with paint, plastics, rubber materials, etc., and will damage them severely.



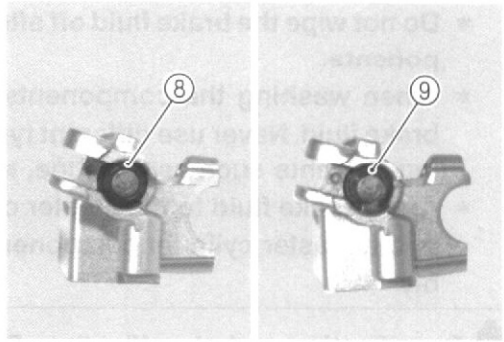
- Disconnect the front brake light switch lead wires ①.
- Remove the right rear view mirror ② and master cylinder assembly ③.



- Remove the brake lever ④ and front brake light switch ⑤.



- Remove the reservoir cap ⑥ and diaphragm ⑦.
- Drain the brake fluid.



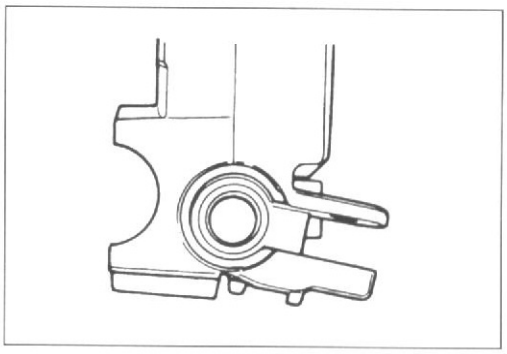
- Pull the dust boot ⑧ out and remove the circlip ⑨.

- Remove the piston assembly.

MASTER CYLINDER INSPECTION

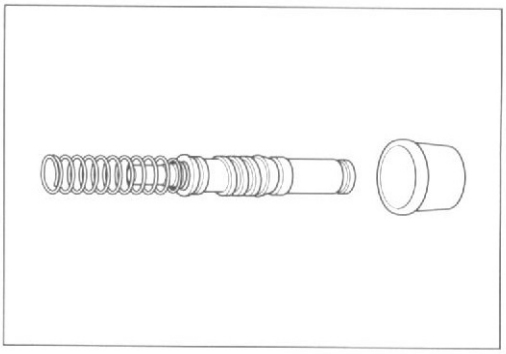
MASTER CYLINDER

Inspect the master cylinder bore for any scratches or damage. If any damages are found, replace the master cylinder with a new one.



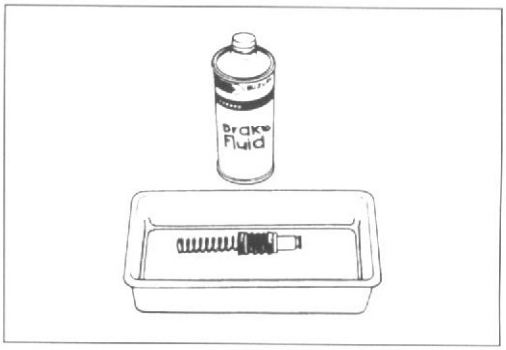
PISTON AND RUBBER PARTS

Inspect the piston surface, primary/secondary cup, and dust boot for any scratches, wear or damage. If any damages are found, replace the piston set with a new one.



MASTER CYLINDER REASSEMBLY AND REMOUNTING

Reassemble and remount the master cylinder in the reverse order of removal and disassembly. Pay special attention to the following points:



⚠ CAUTION

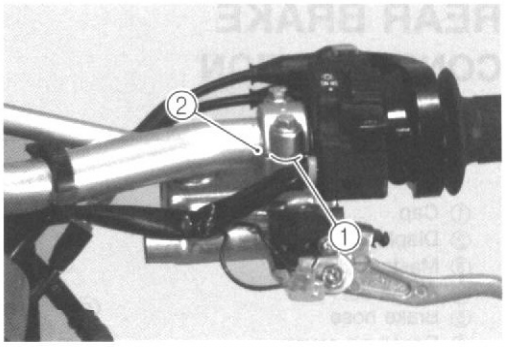
*** Wash the master cylinder components with new brake fluid before reassembly.**
*** Do not wipe the brake fluid off after washing the components.**
*** When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.**
*** Apply brake fluid to the master cylinder bore and all of the master cylinder components before reassembly.**

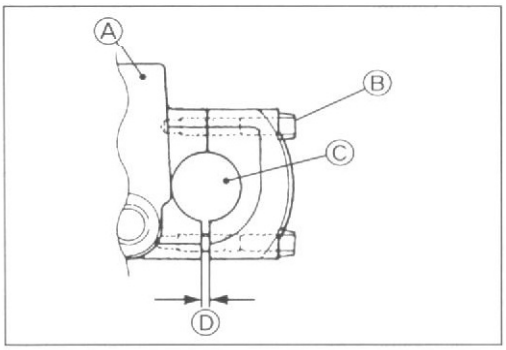
Specification and classification: DOT 4

- When remounting the master cylinder on the handlebar, align the master cylinder holder's mating surface ① with the punch mark ② on the handlebar, and then tighten the upper clamp bolt first.

Master cylinder clamp bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)

Ⓐ Master cylinder
Ⓑ Master cylinder upper clamp bolt
Ⓒ Handlebar
Ⓓ Clearance



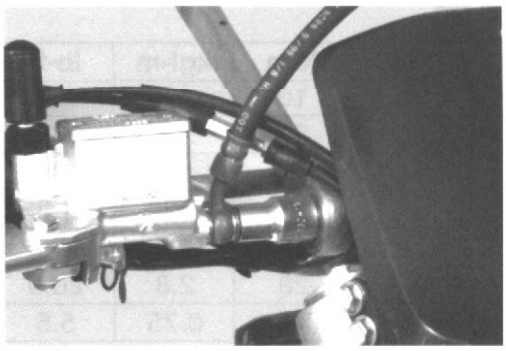


- Tighten the brake hose union bolt to the specified torque.

Brake hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)

⚠ CAUTION

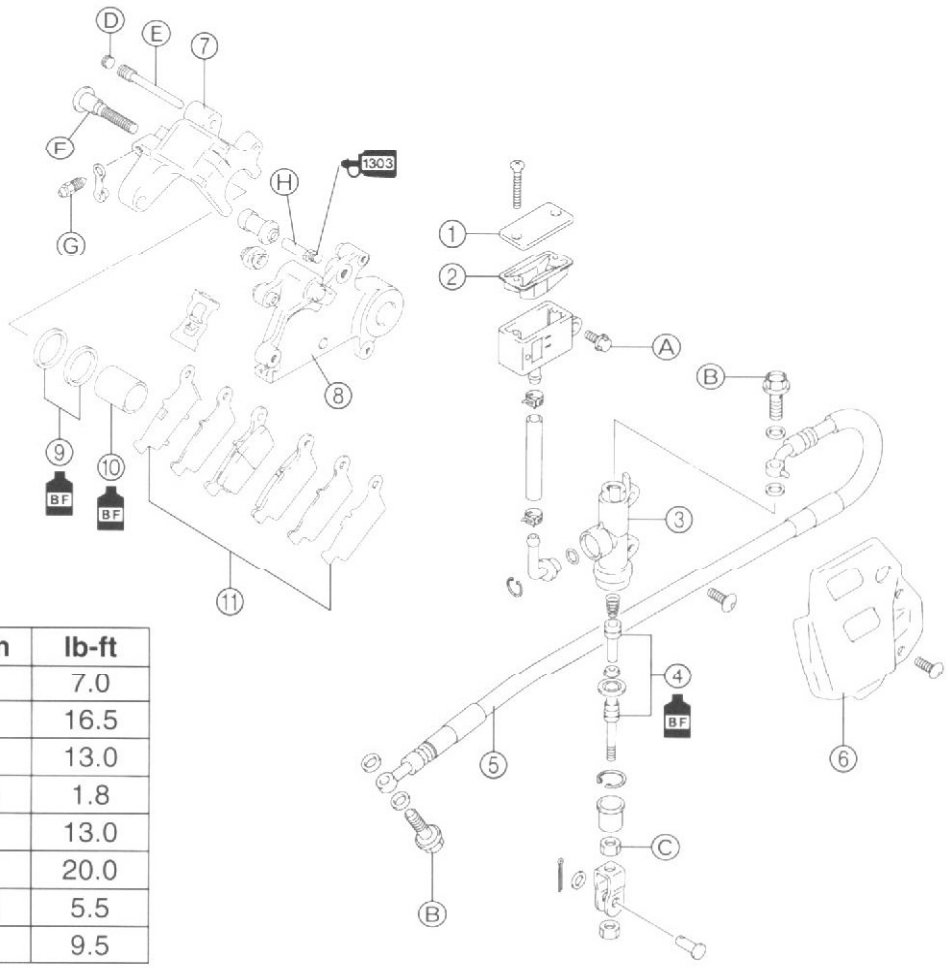
Bleed air from the brake system after reassembling the master cylinder. (☞ 2-19 and 2-20)



REAR BRAKE
CONSTRUCTION

① Cap
② Diaphragm
③ Master cylinder
④ Piston set
⑤ Brake hose
⑥ Reservoir cover
⑦ Caliper
⑧ Caliper holder
⑨ Piston and dust seal
⑩ Piston
⑪ Pad set

Ⓐ Master cylinder mounting bolt
Ⓑ Brake hose union bolt
Ⓒ Rear brake rod locknut
Ⓓ Plug
Ⓔ Brake pad mounting pin
Ⓕ Caliper axle
Ⓖ Air bleeder valve
Ⓗ Caliper axle



ITEM	N·m	kgf-m	lb-ft
Ⓐ	10	1.0	7.0
Ⓑ	23	2.3	16.5
Ⓒ	18	1.8	13.0
Ⓓ	2.5	0.25	1.8
Ⓔ	18	1.8	13.0
Ⓕ	28	2.8	20.0
Ⓖ	7.5	0.75	5.5
Ⓗ	13	1.3	9.5

⚠ WARNING

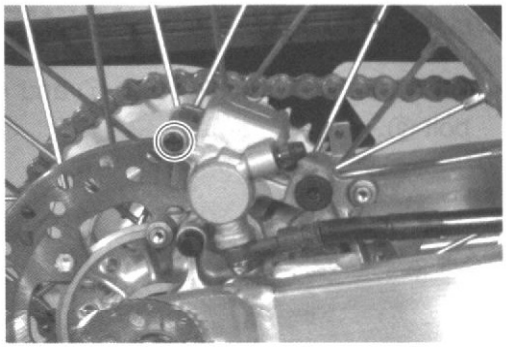
* **The brake system is filled with an glycol-based brake fluid, which is classified DOT 4. Do not use or mix other types of brake fluid, such as silicone-based and petroleum-based brake fluids when refilling the brake system, otherwise serious damage to the brake system will result.**
* **Do not use any brake fluid taken from old, used, or unsealed containers.**
* **Do not reuse brake fluid left over from the last servicing or which has been stored for a long period of time.**
* **When storing brake fluid, make sure to seal the container completely and keep it out of the reach of children.**
* **When replenishing brake fluid, make sure not to get any dust or other foreign materials in the fluid.**
* **When washing brake components, always use new brake fluid. Do not use cleaning solvent.**
* **A contaminated brake disc or brake pad reduces braking performance. Discard contaminated pads and clean the brake disc with high-quality brake cleaner or a neutral detergent.**

⚠ CAUTION

Handle brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials, etc.

BRAKE PAD REPLACEMENT

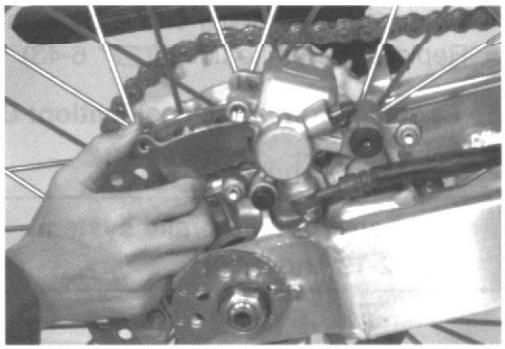
- Remove the brake pad mounting pin.



- Remove the brake pads.

⚠ CAUTION

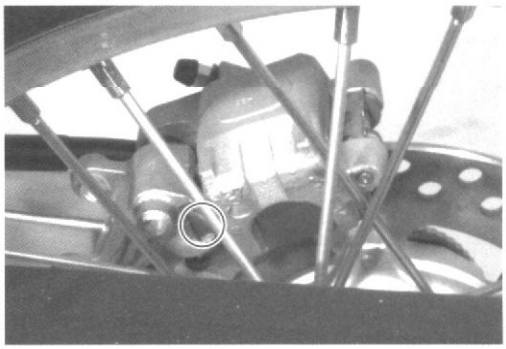
*** Do not operate the brake pedal during or after brake pad removal.**
*** Replace the brake pads as a set, otherwise braking performance will be adversely affected.**



- Install the new brake pads.

⚠ WARNING

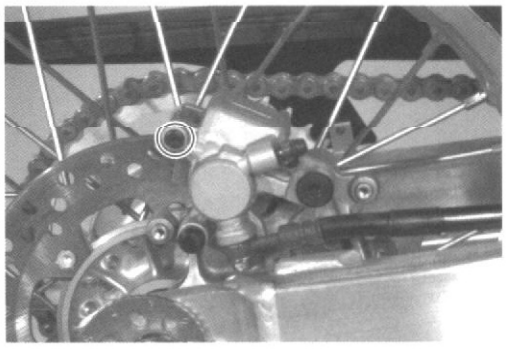
Make sure that the brake pad is properly engaged with the guide plate as shown in the photograph.



- Tighten the brake pad mounting pin to the specified torque.

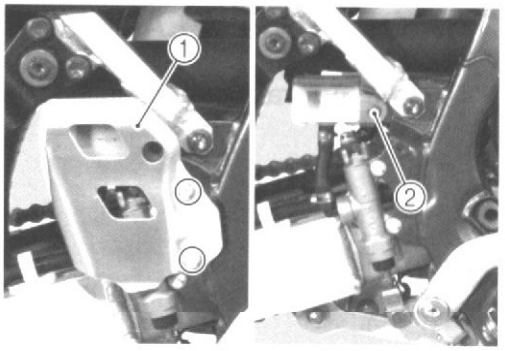
Brake pad mounting pin: 18 N·m (1.8 kgf-m, 13.0 lb-ft)

NOTE:
After replacing the brake pads, pump the brake pedal a few times to check for proper brake operation and then check the brake fluid level.



BRAKE FLUID REPLACEMENT

- Remove the reservoir cover ① and reservoir tank mounting bolt ②.

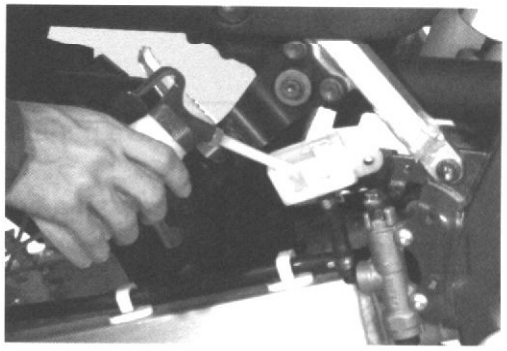


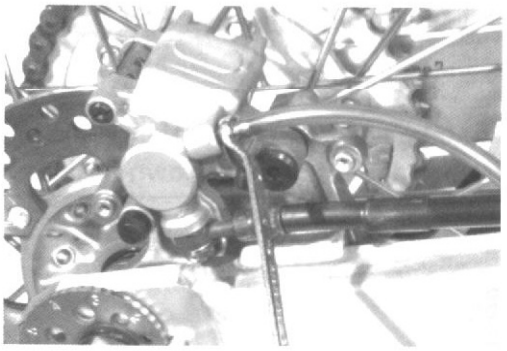
- Remove the reservoir cap and diaphragm.
- Replace the brake fluid. (☞ 6-43)

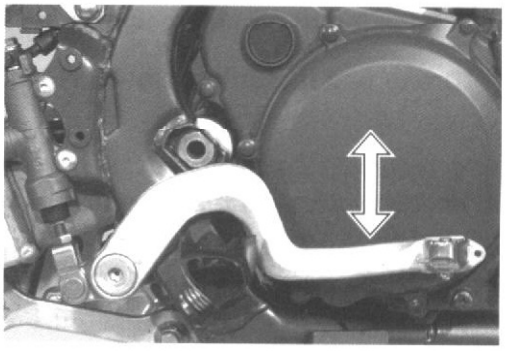
Specification and classification: DOT 4

⚠ CAUTION

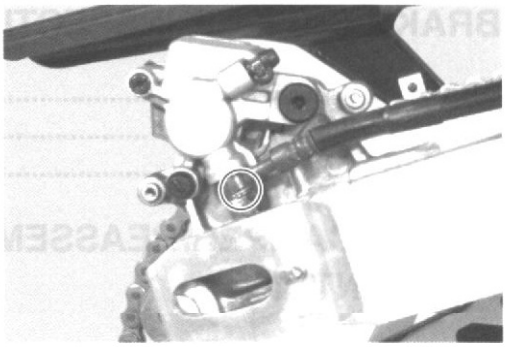
Bleed air from the brake system.
(☞ 2-19 and 2-20)







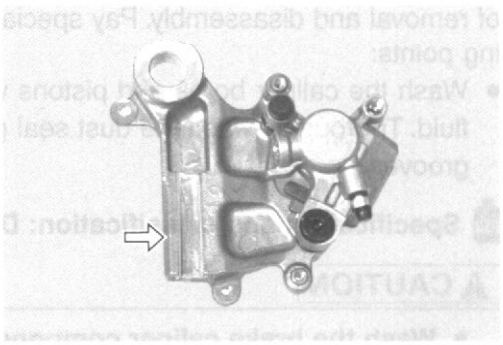
BRAKE CALIPER REMOVAL AND DISASSEMBLY



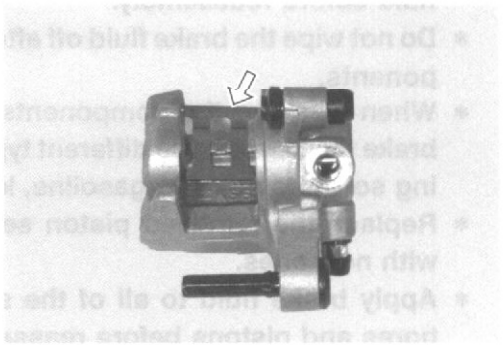
- Remove the rear wheel. (☞ 6-26)
- Disconnect the brake hose from the brake caliper by removing the brake hose union bolt and allow the brake fluid to drain into a suitable receptacle.
- Remove the brake caliper.

⚠ WARNING

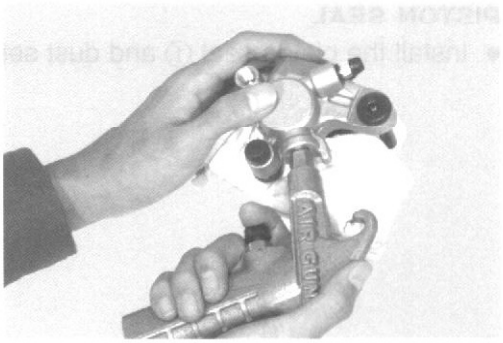
*** Do not reuse the brake fluid left over from the last servicing or which has been stored for a long period of time, otherwise serious damage to the brake system will result.**
*** Brake fluid, if it leaks, will interfere with safe running and discolor painted surfaces. Check the brake hose and hose joints for cracks and oil leakage.**



- Remove the brake pads. (☞ 6-51)
- Remove the brake caliper holder.
- Remove the spring.



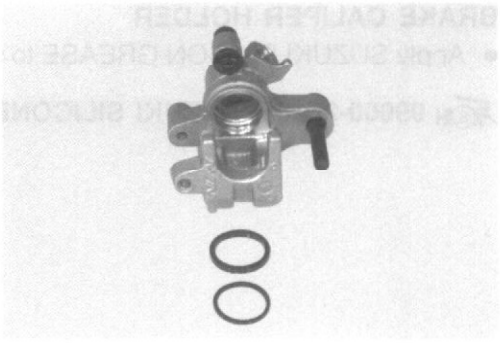
- Place a rag over the brake caliper piston to prevent them from popping out and then force out the piston using compressed air.



⚠ CAUTION

Do not use extremely high pressure to remove the brake caliper piston, otherwise damage to the piston will result.

- Remove the dust seals and piston seals.



⚠ CAUTION

Do not reuse the dust seals and piston seals to prevent fluid leakage.

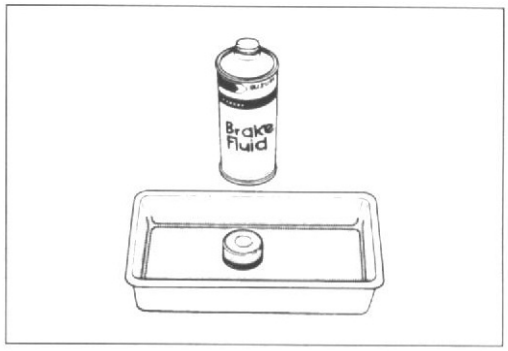
BRAKE CALIPER INSPECTION

BRAKE CALIPER ..... ☞ 6-44
BRAKE CALIPER PISTON ..... ☞ 6-44
RUBBER PARTS ..... ☞ 6-45

BRAKE CALIPER REASSEMBLY AND REMOUNTING

Reassemble and remount the brake caliper in the reverse order of removal and disassembly. Pay special attention to the following points:

- Wash the caliper bores and pistons with the specified brake fluid. Thoroughly wash the dust seal grooves and piston seal grooves.



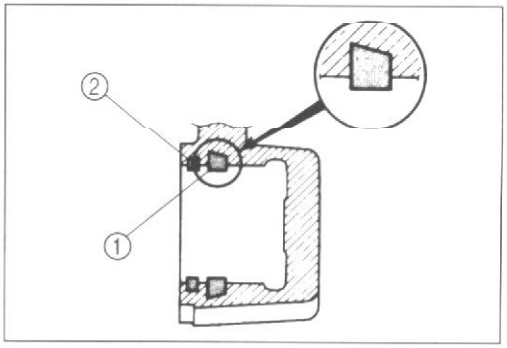
BF Specification and classification: DOT 4

⚠ CAUTION

*** Wash the brake caliper components with new brake fluid before reassembly.**
*** Do not wipe the brake fluid off after washing the components.**
*** When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.**
*** Replace the removed piston seals and dust seals with new ones.**
*** Apply brake fluid to all of the seals, brake caliper bores and pistons before reassembly.**

PISTON SEAL

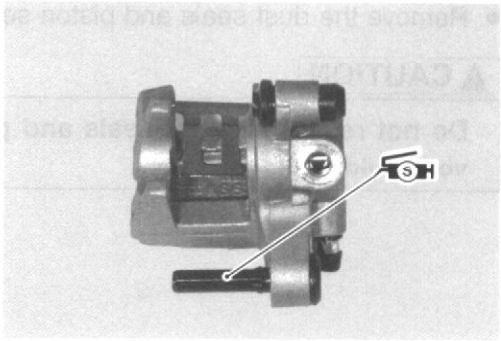
- Install the piston seal ① and dust seal ② as shown.



BRAKE CALIPER HOLDER

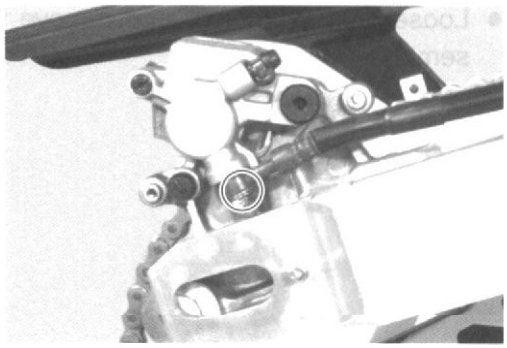
- Apply SUZUKI SILICON GREASE to the brake caliper holder.

S Ⓗ 99000-25100: SUZUKI SILICONE GREASE



- Tighten the brake hose union bolt to the specified torque.

Brake hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)



NOTE:
Before remounting the rear wheel, push the brake caliper pistons all the way into the caliper.

⚠ CAUTION

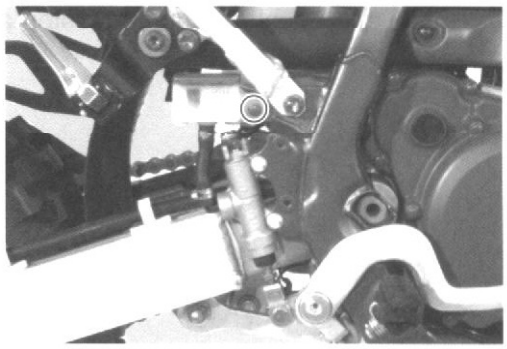
Bleed air from the system after remounting the rear wheel. (☞ 2-19 and 2-20)

BRAKE DISC INSPECTION

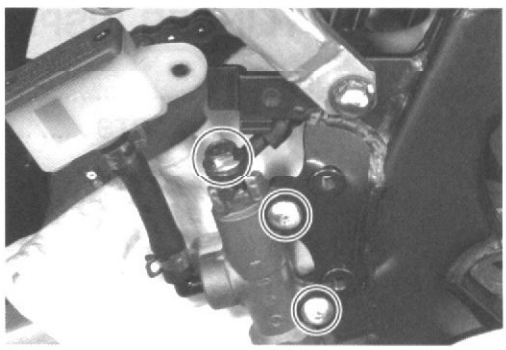
BRAKE DISC ..... ☞ 6-46

MASTER CYLINDER REMOVAL AND DISASSEMBLY

- Remove the reservoir cover. (☞ 6-52)
- Remove the reservoir mounting bolt.



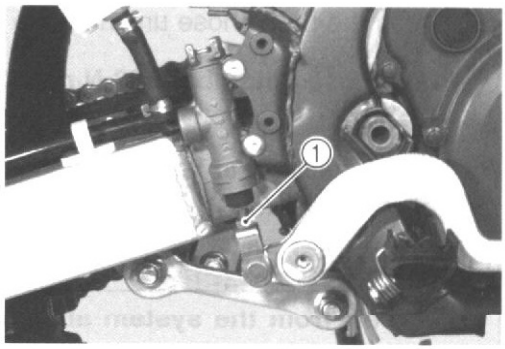
- Place a rag underneath the brake hose union bolt on the master cylinder to catch any spilt brake fluid. Remove the brake hose union bolt and disconnect the brake hose.



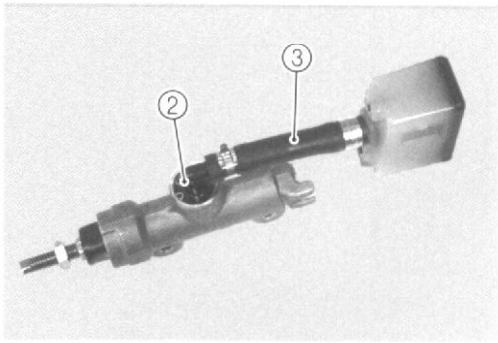
⚠ CAUTION

Immediately wipe off any brake fluid contacting any part of the motorcycle. The brake fluid reacts chemically with paint, plastics, rubber materials, etc., and will damage them severely.

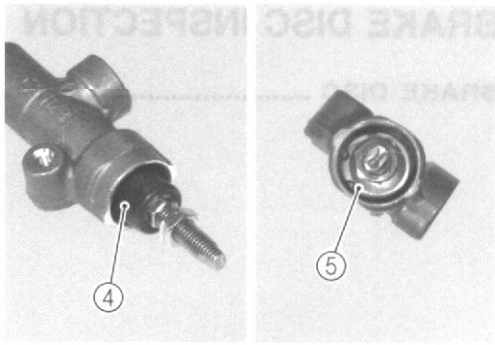
- Loosen the locknut ① and remove the master cylinder assembly.



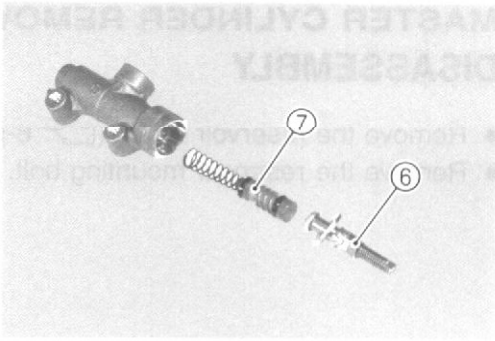
- Remove the circlip ② and reservoir assembly ③.



- Pull the dust boot ④ out and remove the circlip ⑤.



- Remove the push rod ⑥ and piston assembly ⑦.



MASTER CYLINDER INSPECTION

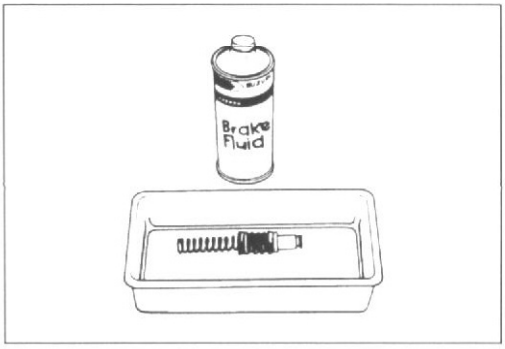
MASTER CYLINDER ..... ☞ 6-48
PISTON AND RUBBER PARTS ..... ☞ 6-48

MASTER CYLINDER REASSEMBLY AND REMOUNTING

Reassemble and remount the master cylinder in the reverse order of removal and disassembly. Pay special attention to the following points:

⚠ CAUTION

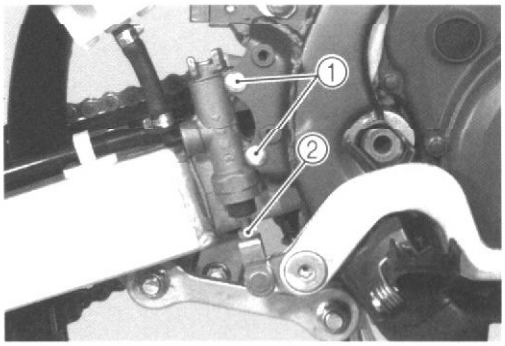
*** Wash the master cylinder components with new brake fluid before reassembly.**
*** Do not wipe the brake fluid off after washing the components.**
*** When washing the components, use the specified brake fluid. Never use different types of fluid or cleaning solvents such as gasoline, kerosine, etc.**
*** Apply brake fluid to the master cylinder bore and all of the master cylinder components before reassembly.**



Specification and classification: DOT 4

- Tighten the master cylinder mounting bolts ①, brake rod locknut ②, and brake hose union bolt to the specified torque.

Master cylinder mounting bolt: 10 N·m (1.0 kgf-m, 7.0 lb-ft)
Brake rod locknut: 18 N·m (1.8 kgf-m, 13.0 lb-ft)
Brake hose union bolt: 23 N·m (2.3 kgf-m, 16.5 lb-ft)



⚠ CAUTION

Bleed air from the brake system after reassembling the master cylinder. (☞ 2-19 and 2-20)

ELECTRICAL SYSTEM

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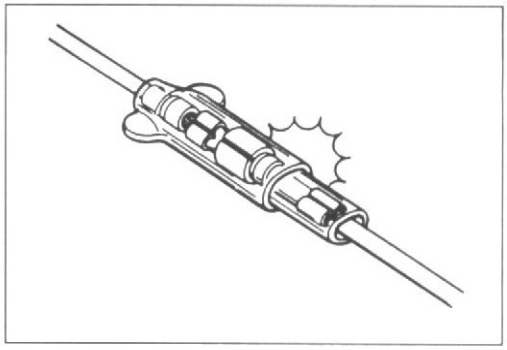
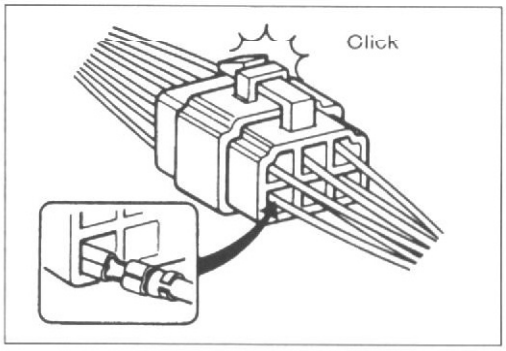
CAUTIONS IN SERVICING

CONNECTORS



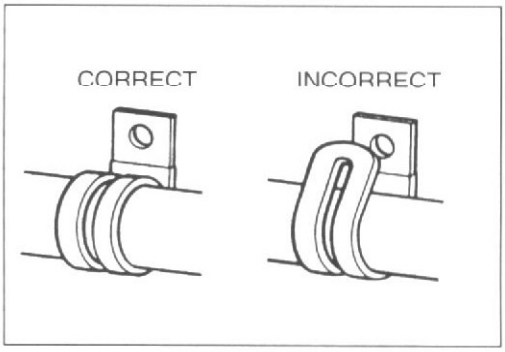
- When disconnecting a connector, be sure to hold the terminals; do not pull the lead wires.
- When connecting a connector, push it in so it is firmly attached.
- Inspect the connector for corrosion, contamination and any breakage in the cover.

COUPLERS



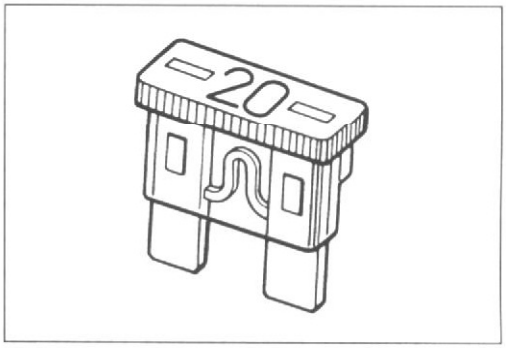
- With a lock-type coupler, be sure to release the lock before disconnecting it. When connecting a coupler, push it in until the lock clicks shut.
- When disconnecting a coupler, be sure to hold the coupler; do not pull the lead wires.
- Inspect each terminal on the coupler for looseness or bends.
- Inspect each terminal for corrosion and contamination.

CLAMPS



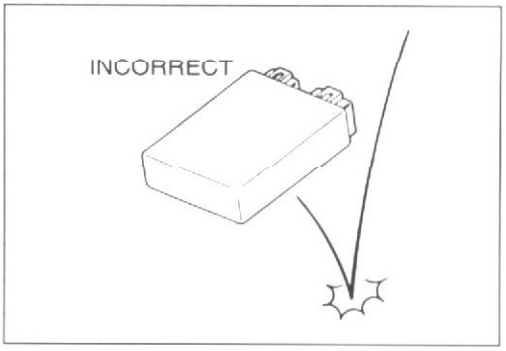
- Refer to the "WIRE HARNESS, CABLE, AND HOSE ROUTING" section for proper clamping procedures. (☞ 8-12 to 8-18)
- Bend the clamp properly, as shown in the illustration.
- When clamping the wire harness, do not allow it to hang down.
- Do not use wire or any substitutes for the band-type clamp.

FUSE



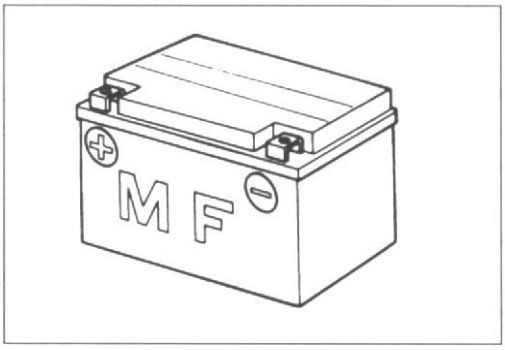
- When a fuse blows, always investigate the cause, correct the problem, and then replace the fuse.
- Do not use a fuse of a different capacity.
- Do not use any substitutes for the fuse (e.g., wire).

SEMICONDUCTOR EQUIPPED PARTS



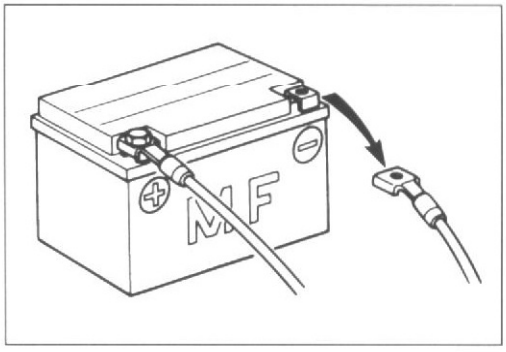
- Do not drop any part that contains a semiconductor (e.g., CDI unit, regulator/rectifier).
- When inspecting the part, follow the inspection instructions carefully. Neglecting proper procedures may cause this part to be damaged.

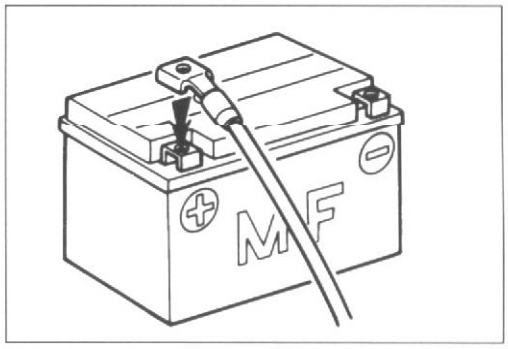
BATTERY



- The battery has been pre-filled with electrolyte so there is no need to add fluid at any time.
- The MF battery used in this motorcycle does not require maintenance (e.g., electrolyte level inspection, distilled water replenishment).
- During normal charging, no hydrogen gas is produced. However, if the battery is overcharged, hydrogen gas may be produced. Therefore, make sure that there are no fire or spark sources (e.g., short circuit) nearby when charging the battery.
- Be sure to recharge the battery in a well-ventilated and open area.
- Note that the charging system for the MF battery is different from that of a conventional battery. Do not replace the MF battery with a conventional battery.

CONNECTING THE BATTERY



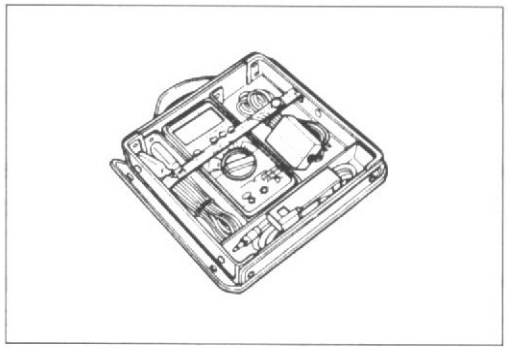


- When disconnecting terminals from the battery for disassembly or servicing, be sure to disconnect the ⊖ battery lead wire, first.
- When connecting the battery lead wires, be sure to connect the ⊕ battery lead wire, first.
- If the terminal is corroded, remove the battery, pour warm water over it and clean it with a wire brush.
- After connecting the battery, apply a light coat of grease to the battery terminals.
- Install the cover over the ⊕ battery terminal.

WIRING PROCEDURE

- Properly route the wire harness according to the "WIRE HARNESS, CABLE, AND HOSE ROUTING" section. (☞ 8-12 to 8-20)

USING THE MULTI CIRCUIT TESTER

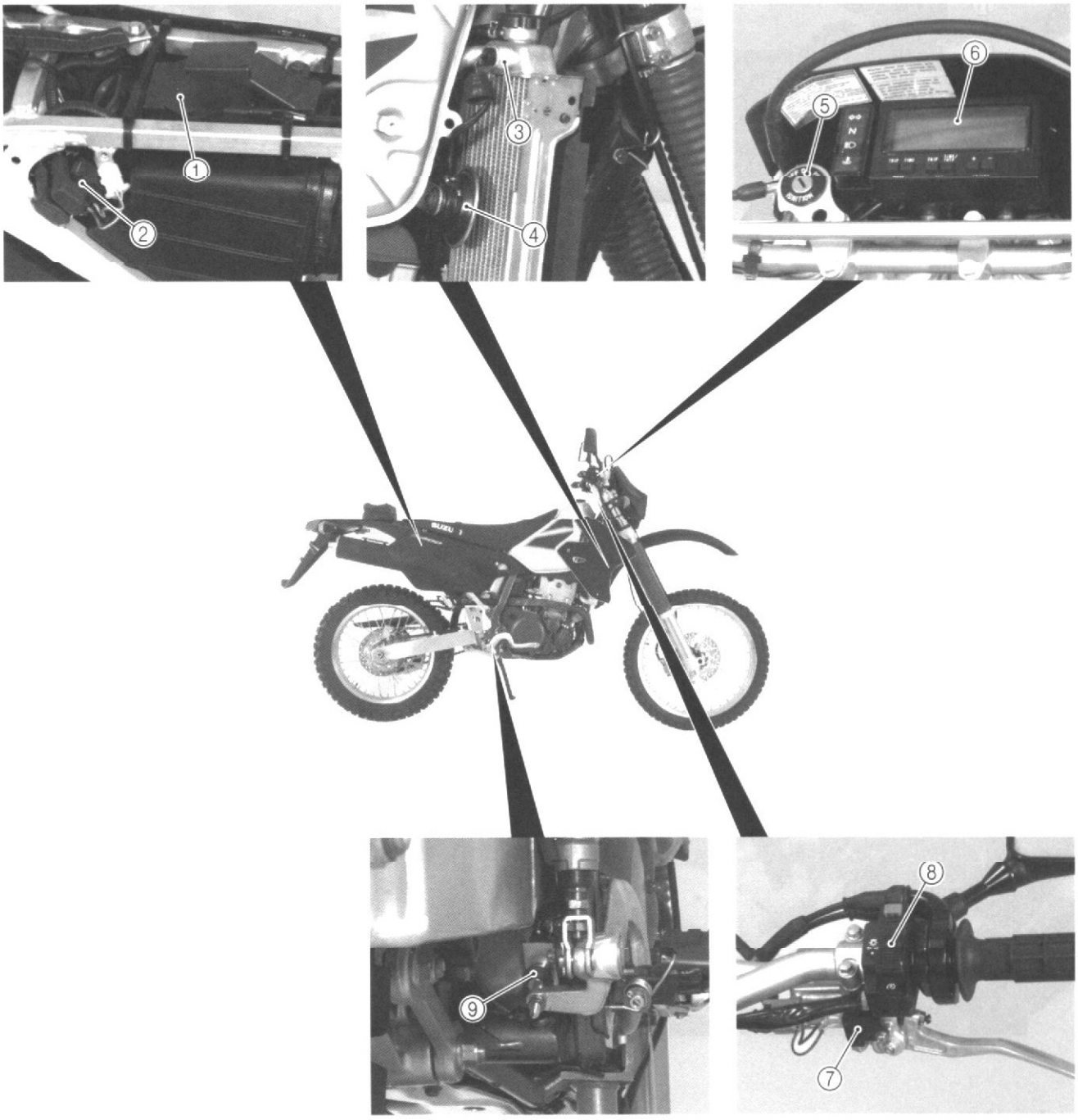


- Properly use the multi circuit tester ⊕ and ⊖ probes. Improper use can cause damage to the motorcycle and tester.
- If the voltage and current values are not known, begin measuring in the highest range.
- When measuring the resistance, make sure that no voltage is applied. If voltage is applied, the tester will be damaged.
- After using the tester, be sure to turn the switch to the "OFF" position.

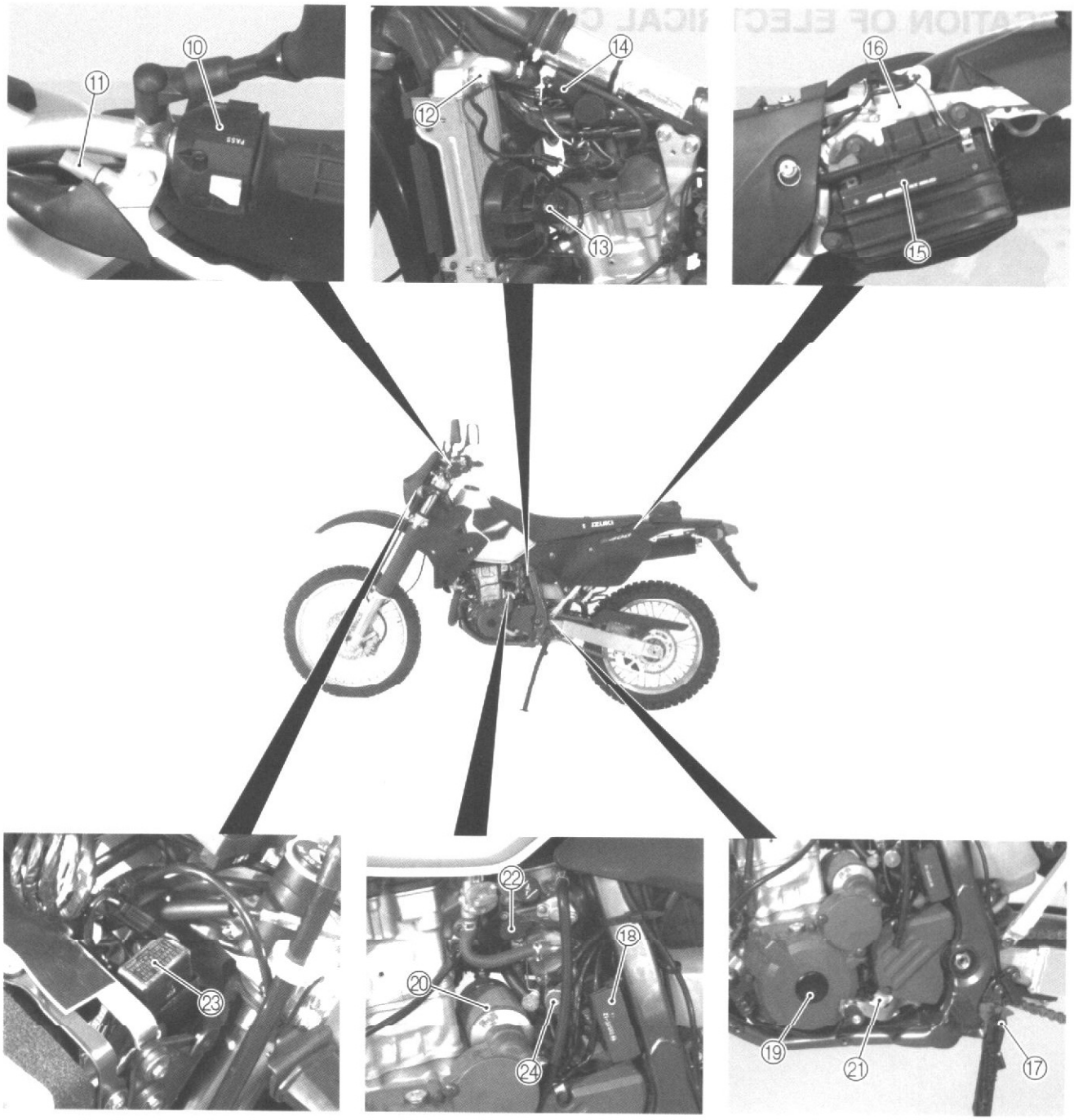
⚠ CAUTION

Before using the multi circuit tester, be sure to read its instruction manual.

LOCATION OF ELECTRICAL COMPONENTS



① CDI unit
② Starter relay
③ Engine coolant temperature thermoswitch
④ Horn
⑤ Ignition switch
⑥ Speedometer
⑦ Front brake light switch
⑧ Right handlebar switch
⑨ Rear brake light switch

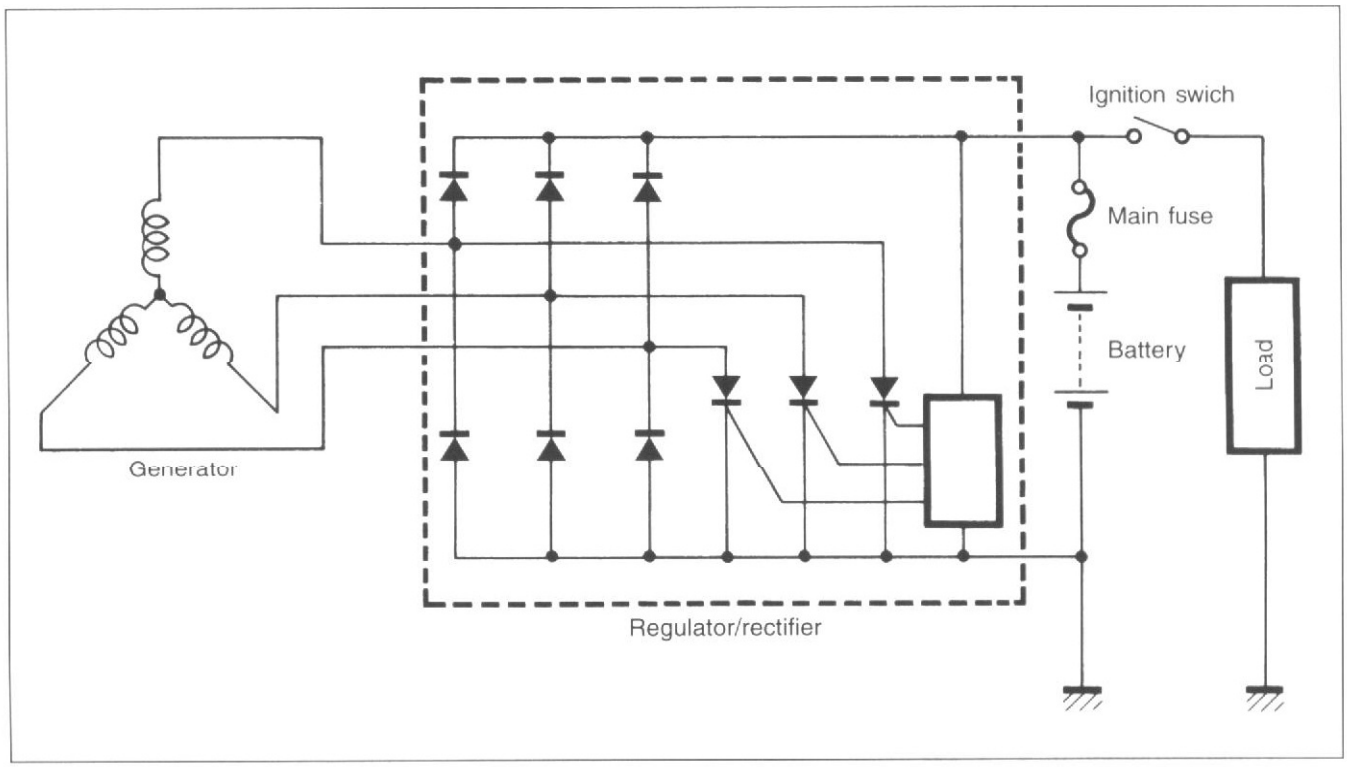


⑩ Left handlebar switch
⑪ Clutch lever position switch
⑫ Cooling fan thermoswitch
⑬ Cooling fan motor
⑭ Ignition coil
⑮ Battery
⑯ Fuse box
⑰ Side stand switch
⑱ Regulator/rectifier
⑲ Generator
⑳ Starter motor
㉑ Neutral switch
㉒ Throttle position sensor
㉓ Turn signal/side stand relay
㉔ Piston valve control solenoid

CHARGING SYSTEM

DESCRIPTION

The charging system consists of a generator, regulator/rectifier, and battery. The AC current, which is generated by the generator, is converted by the regulator/rectifier into DC current. The regulator/rectifier is one unit with two functions. The regulator prevents overcharging of the battery by grounding the excessive AC current. The rectifier changes the AC current, which is produced by the generator, to the DC current.
All of these components work together to maintain a correct and constant voltage and to prevent the battery from overcharging.



TROUBLESHOOTING

Battery runs down quickly.

Check accessories which use excessive amounts of electricity.
- Accessories are installed → • Remove accessories

No accessories

Check the battery for current leakage. (☞ 7-9)
- Current leaks → • Short circuit of the wire harness
  • Loose or disconnected wires
  • Faulty battery

No current leaks

Measure the regulated voltage. (☞ 7-9)
- Correct → • Faulty battery
  • Abnormal driving condition

Incorrect

Check the continuity of the generator. (☞ 7-10)
- No continuity → • Faulty stator coil or disconnected lead wires

Continuity

Inspect the generator no-load performance. (☞ 7-10)
- Incorrect → • Faulty generator

Correct

Inspect the regulator/rectifier. (☞ 7-11)
- Incorrect → • Faulty regulator/rectifier

Correct

Inspect the wires.
- Incorrect → • Short circuit of wire harness
  • Improper coupler contact

Correct → • Faulty battery

Others

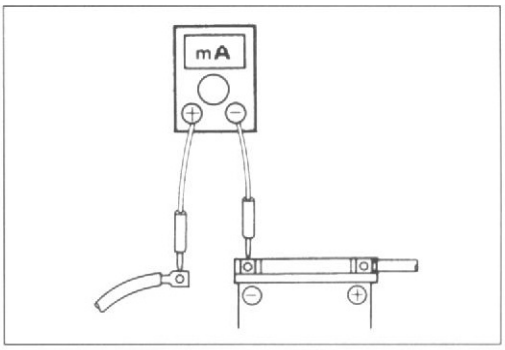
Battery overcharges	• Faulty regulator/rectifier • Faulty battery • Poor contact of generator lead wire coupler

INSPECTION

BATTERY CURRENT LEAKAGE

- Turn the ignition switch to the "OFF" position.
- Remove the battery cover. (☞ 6-2)
- Disconnect the - battery lead wire.

Measure the current between the - battery terminal and the - battery lead wire using the multi circuit tester. If the reading exceeds the specified value, leakage is evident.



TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Current (— , 20mA)

DATA Battery current (leak): Under 1mA

⚠ CAUTION

*** Because the current leak might be large, turn the multi circuit tester to the high range first to avoid damage to the tester.**
*** Do not turn the ignition switch to the "ON" position when measuring the current.**

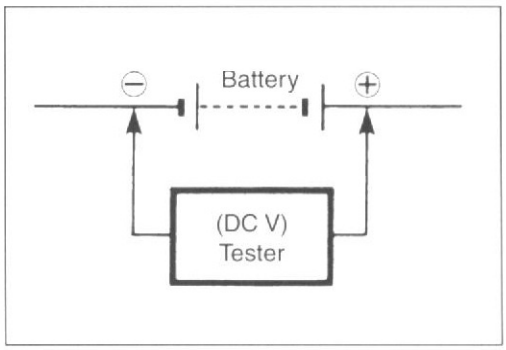
When checking to find the excessive current leakage, remove the couplers and connectors, one by one, checking each part.

REGULATED VOLTAGE

- Remove the battery cover. (☞ 6-2)
- Start the engine and run the engine at 5 000 r/min.

Measure the DC voltage between the + and - battery terminals using the multi circuit tester. If the voltage is not within the specified value, inspect the generator and regulator/rectifier. (☞ 7-10 and 7-11)

NOTE:
When performing this measurement, make sure that the battery is fully charged.



TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Voltage (⎓)

DATA Charging output (regulated voltage)
Standard: 13.5 – 15.0 V at 5 000 r/min

STATOR COIL RESISTANCE

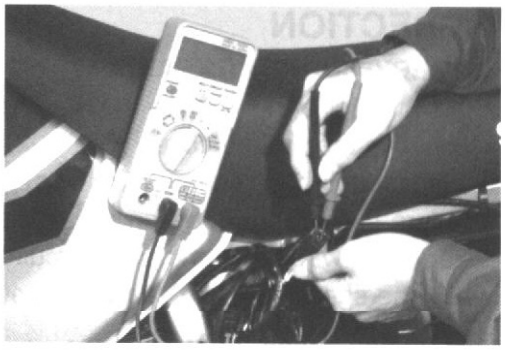
- Remove the left frame cover. (☞ 6-2)
- Disconnect the stator coil lead wire coupler.

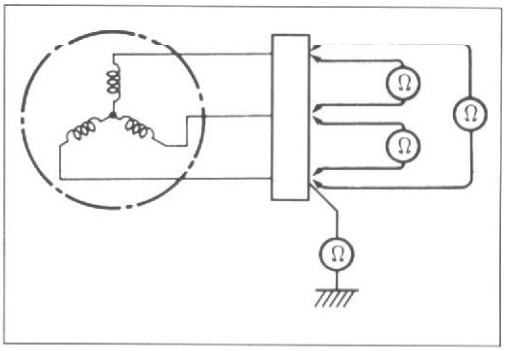
Measure the resistance between the three lead wires using the multi circuit tester. If the resistance is not within the specified value, replace the stator coil with a new one.
Also, check that the generator core is insulated.

TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Resistance (Ω)

DATA Stator coil resistance
Standard: 0.50 – 1.25 Ω (Yellow – Yellow)
∞ Ω (Yellow – Ground)





AC GENERATOR NO-LOAD PERFORMANCE

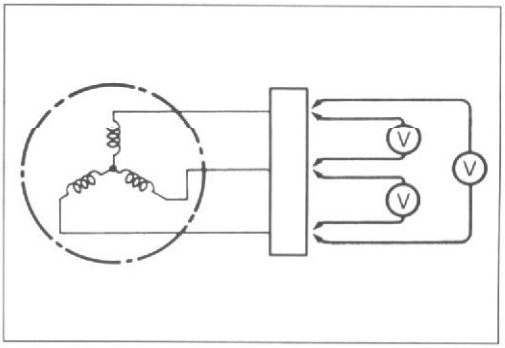
- Remove the left frame cover. (☞ 6-2)
- Disconnect the stator coil lead wire coupler.
- Start the engine and run it at 5 000 r/min.

Measure the AC voltage between the lead wires of the generator using the multi circuit tester. If the voltage is under the specified value, replace the AC generator with a new one.

TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Voltage (~)

DATA AC generator no-load performance
Standard:
More than 75 V (AC) at 5 000 r/min



REGULATOR/RECTIFIER

- Remove the left frame cover. (☞ 6-2)
- Disconnect the regulator/rectifier couplers.

Measure the voltage between the terminals using the multi circuit tester, as indicated in the table below. If the voltage is not within the specified value, replace the regulator/rectifier with a new one.

09900-25008: Multi circuit tester set

Tester knob indication: Diode test (⊣◀)

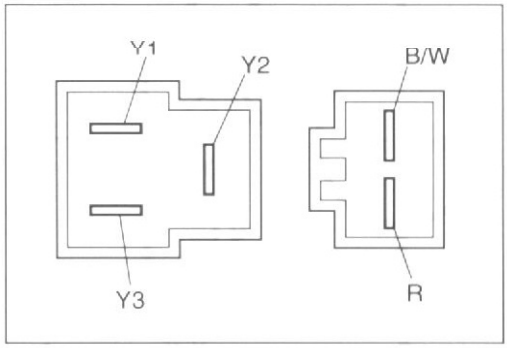
Unit: V

⊖ Tester probe \ ⊕ Tester probe	R	B/W	Y_1	Y_2	Y_3
R		0.5 – 1.2	0.4 – 0.7	0.4 – 0.7	0.4 – 0.7
B/W	1.4 – 1.5		1.4 – 1.5	1.4 – 1.5	1.4 – 1.5
Y_1	1.4 – 1.5	0.4 – 0.7		1.4 – 1.5	1.4 – 1.5
Y_2	1.4 – 1.5	0.4 – 0.7	1.4 – 1.5		1.4 – 1.5
Y_3	1.4 – 1.5	0.4 – 0.7	1.4 – 1.5	1.4 – 1.5	

R: Red, Y: Yellow, B/W: Black with White tracer

NOTE:

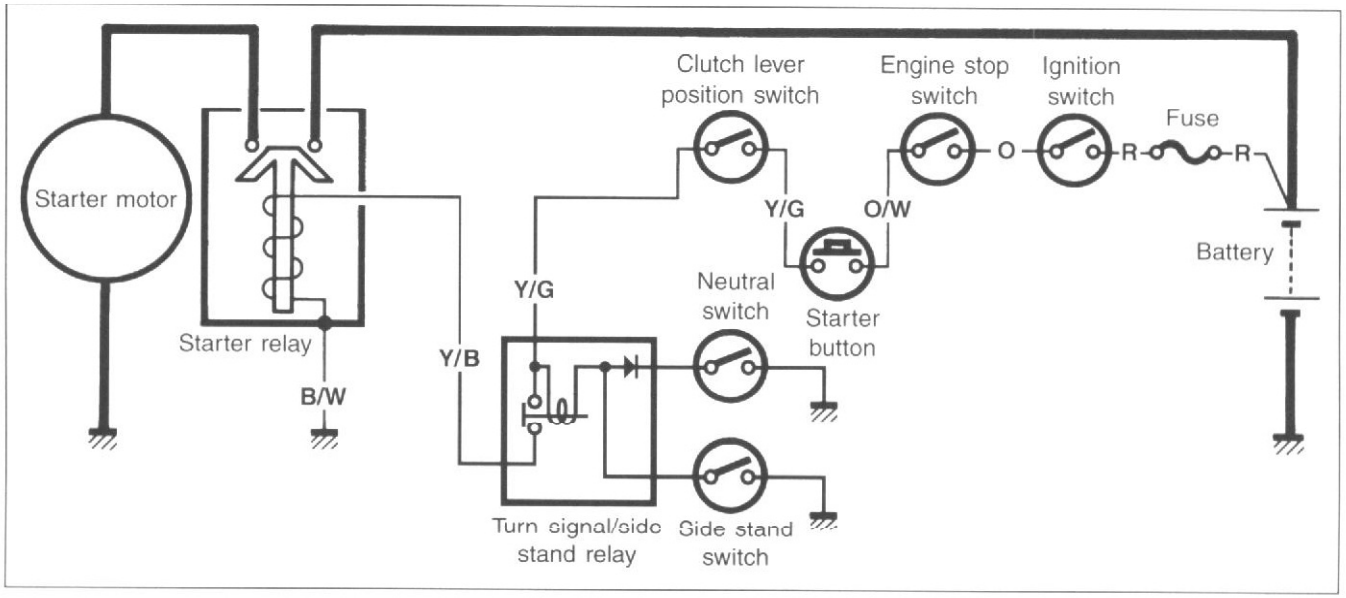
If the tester reads under 1.4 V, disconnect the tester probes from the wire leads, and then replace the multi circuit tester's battery.



STARTER SYSTEM

DESCRIPTION

The starter system consists of the following components: the starter motor, starter relay, side stand switch, neutral switch, turn signal/side stand relay, clutch lever position switch, starter button, engine stop switch, ignition switch, and battery. Pressing the starter button energizes the starter relay, causing the contact points to close, thus, completing the circuit from the starter motor to the battery. The starter motor draws about 80 amperes to start the engine.



TROUBLESHOOTING

Starter motor will not run

The transmission is in neutral. Turn the ignition switch to the "ON" position. Push the engine stop switch in "RUN" position. Grasp the clutch lever. Listen for a click from the starter relay when the starter button is pushed.

Clicks → Check if the starter motor runs when its terminal is connected to the ⊕ battery terminal (Do not use a thin wire because a large amount of current flows.)

Runs
- Faulty starter relay
- Loose or disconnected starter motor lead wire

Does not run
- Faulty starter motor

No click

Continued on next page

Measure the starter relay voltage at the starter relay connectors (between Y/B ⊕ and B/W ⊖) when the starter button is pushed.

— No voltage → • Faulty ignition switch
• Faulty engine stop switch
• Faulty starter button
• Faulty clutch lever position switch
• Faulty turn signal/side stand relay
• Faulty neutral switch
• Improper connector contact

Voltage

Inspect the starter relay. (☞ 7-16)

— Incorrect → • Faulty starter relay

Correct

→ • Improper starter relay contact

The starter motor runs when the transmission is in neutral, but does not run when the transmission is in any position other than neutral, with the side stand up.

Check the side stand switch. (☞ 7-17)

— Incorrect → • Faulty side stand switch

Correct

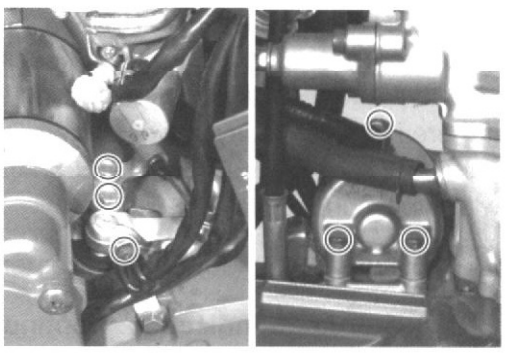
→ • Open circuit in wire harness
• Poor contact of connector

Others

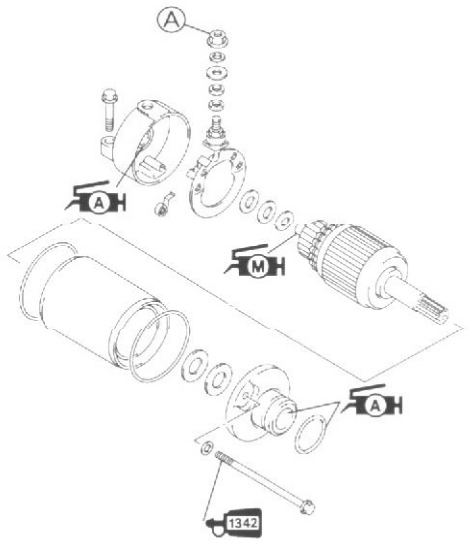
Engine does not turn though the starter motor runs.	• Faulty starter clutch

STARTER MOTOR REMOVAL AND DISASSEMBLY

- Remove the exhaust pipe/muffler. (☞ 3-5)
- Remove the clutch cable guide mounting bolt.
- Disconnect the starter motor lead wire.
- Remove the starter motor.



- Disassemble the starter motor, as shown.

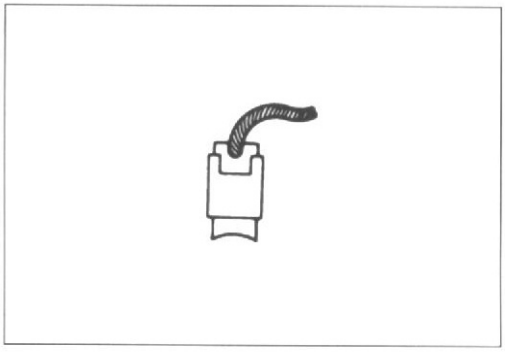


ITEM	N·m	kgf-m	lb-ft
Ⓐ	5	0.5	3.5

STARTER MOTOR INSPECTION

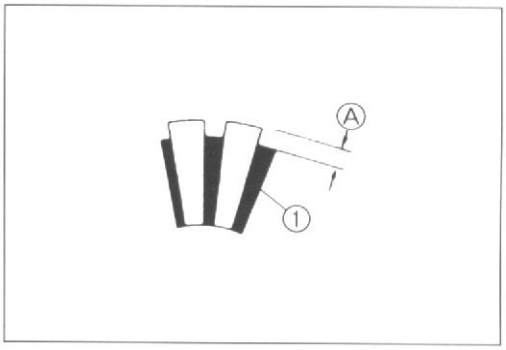
CARBON BRUSHES

Inspect the carbon brushes for abnormal wear, cracks, or smoothness in the brush holder.
If any damages are found, replace the brush assembly with a new one.



COMMUTATOR

Inspect the commutator for discoloration, abnormal wear or undercut Ⓐ.
If abnormal wear is found, replace the armature with a new one.
If the commutator surface is discolored, polish it with #400 sandpaper and wipe it using a clean, dry cloth.
If there is no undercut, scrape out the insulator ① with a saw blade.

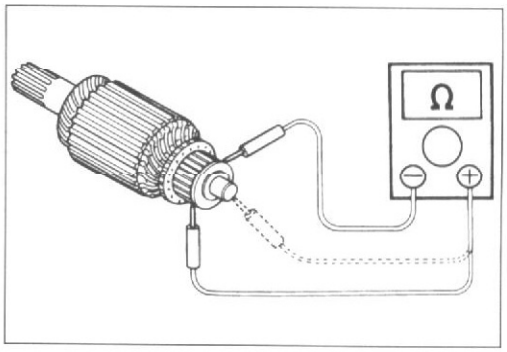


ARMATURE COIL INSPECTION

Check for continuity between each segment and between each segment and the armature shaft using the multi circuit tester.
If there is no continuity between the segments or there is continuity between the segments and shaft, replace the armature with a new one.

09900-25008: Multi circuit tester set

Tester knob indication: Continuity test (•)))



OIL SEAL

Check the seal lip for damage or leakage. If any damages are found, replace the housing end (inside) of the starter motor with a new one.

STARTER MOTOR REASSEMBLY AND REMOUNTING

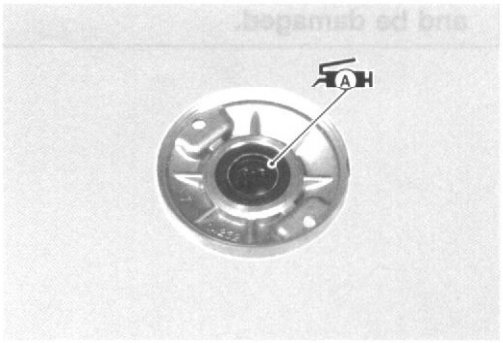
Reassemble and remount the starter motor in the reverse order of removal and disassembly. Pay special attention to the following points:

⚠ CAUTION

Replace the removed O-rings with new ones to prevent oil leakage and moisture.

- Apply SUZUKI SUPER GREASE "A" to the lip of the oil seal.

For USA
(A)H 99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
(A)H 99000-25010: SUZUKI SUPER GREASE "A"

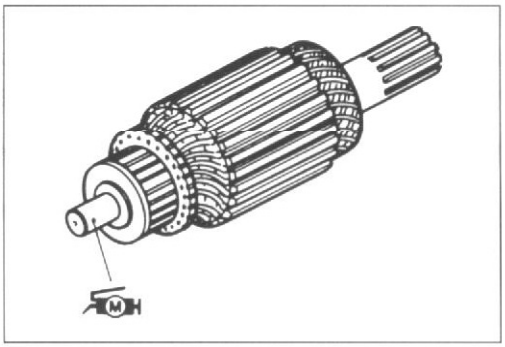


- Apply a small quantity of SUZUKI MOLY PASTE to the armature shaft.

(M)H 99000-25140: SUZUKI MOLY PASTE

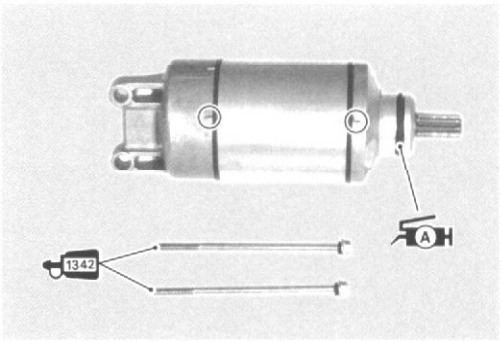
- Align the match marks on the starter motor case with the match mark on the housing end.
- Apply a small quantity of THREAD LOCK "1342" to the starter motor housing bolts.

1342 99000-32050: THREAD LOCK "1342"

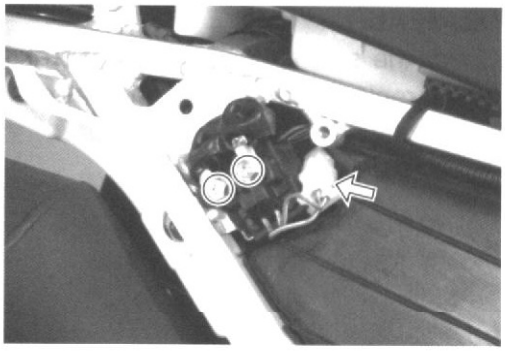


- Apply SUZUKI SUPER GREASE "A" to the O-ring.

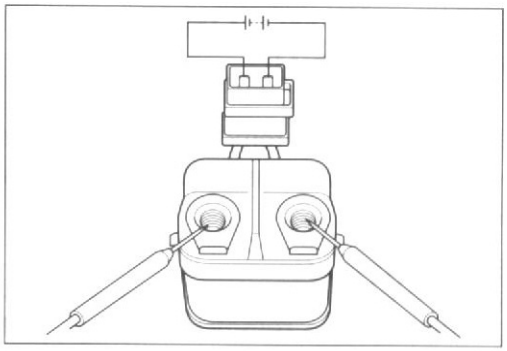
For USA
(A)H 99000-25030: SUZUKI SUPER GREASE "A"
For the other countries
(A)H 99000-25010: SUZUKI SUPER GREASE "A"



STARTER RELAY INSPECTION



- Remove the right frame cover. (☞ 6-2)
- Disconnect the starter motor lead wire, battery lead wire, and starter relay coupler at the starter relay.
- Remove the starter relay.



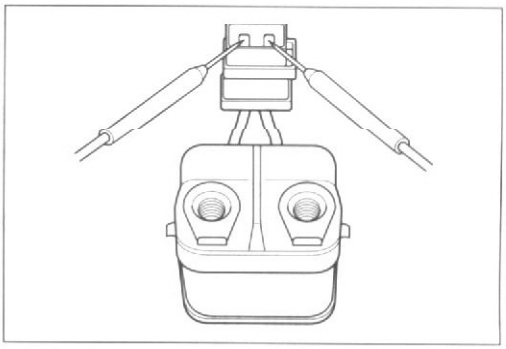
Apply 12 V to the terminals and check for continuity between the positive and negative terminals using the multi circuit tester. If the starter relay clicks and continuity is found, the relay is ok.

TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Continuity test (•)))

⚠ CAUTION

Do not apply battery voltage to the starter relay for more than five seconds, since the relay coil may overheat and be damaged.



Measure the relay coil resistance between the terminals using the multi circuit tester. If the resistance is not within the specified value, replace the starter relay with a new one.

TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Resistance (Ω)

DATA Starter relay resistance
Standard: 3 – 5 Ω

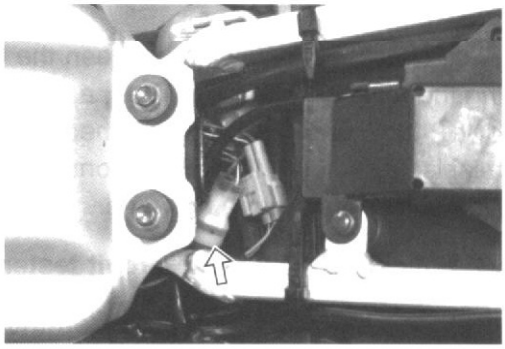
SIDE STAND/IGNITION INTERLOCK SYSTEM PARTS INSPECTION

Check the interlock system for proper operation. If the interlock system does not operate properly, check each component for damage or abnormalities. If any abnormality is found, replace the component with a new one.

NEUTRAL INDICATOR LIGHT SWITCH

The neutral indicator light switch coupler is located under the seat.

- Remove the seat. (☞ 6-2)
- Disconnect the neutral indicator light switch coupler and measure the continuity between the Blue and Black/White lead wires with the transmission in neutral.

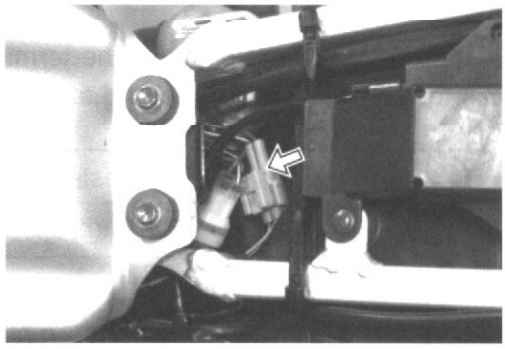


	Blue	Black/White
ON (in neutral)	○	○
OFF (not in neutral)		

SIDE STAND SWITCH

The side stand switch coupler is located under the seat.

- Remove the seat. (☞ 6-2)
- Disconnect the side stand switch coupler and measure the voltage between the Green and Black/White lead wires with the side stand up.



TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Diode test (⊣◄)

	Green (⊕ probe)	Black/White (⊖ probe)
ON (side stand up)	0.4 – 0.6 V	
OFF (side stand down)	1.4 – 1.5 V	

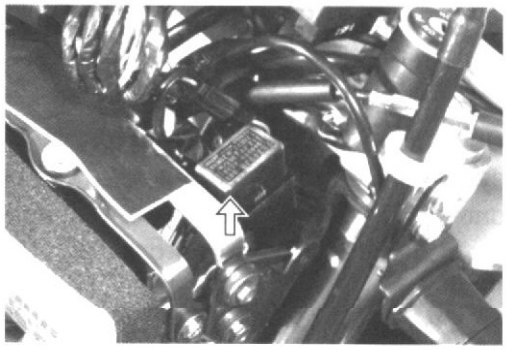
NOTE:

If the multi circuit tester reads under 1.4 V, replace its battery when the tester probes are not connected.

TURN SIGNAL/SIDE STAND RELAY AND DIODE

The turn signal/side stand relay, which is located behind the headlight bracket, is composed of the turn signal relay/side stand relay and diode.

- Remove the headlight assembly. (☞ 7-29)
- Remove the turn signal/side stand relay.

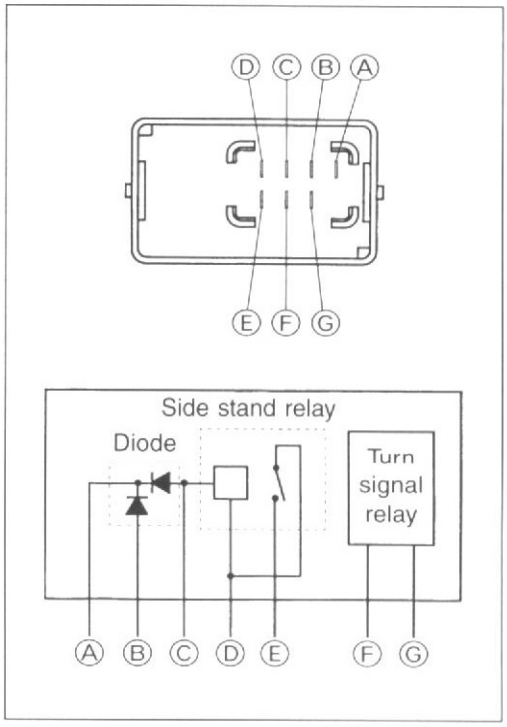


Side stand relay

First, check the insulation between the Ⓓ and Ⓔ terminals using the multi circuit tester. Then, apply 12 V to terminals Ⓓ and Ⓒ (⊕ to Ⓓ and ⊖ to Ⓒ) and check the continuity between terminals Ⓓ and Ⓔ. If there is no continuity, replace the turn signal/side stand relay with a new one.

09900-25008: Multi circuit tester set

Tester knob indication: Continuity test (•)))

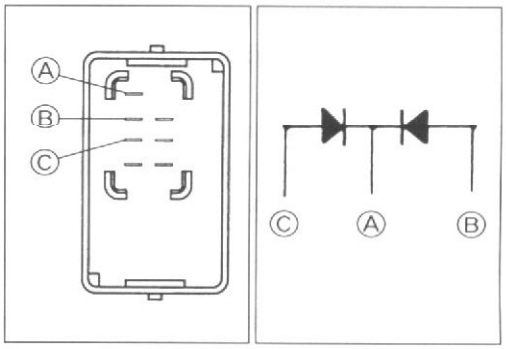


Diode Inspection

Measure the voltage between the terminals using the multi circuit tester. Refer to the following table.

Unit: V

⊖ Tester probe	⊕ Tester probe		
	Ⓒ, Ⓑ	Ⓐ
Ⓒ, Ⓑ		1.4 – 1.5
Ⓐ	0.4 – 0.6	



09900-25008: Multi circuit tester set

Tester knob indication: Diode test (⊣◀)

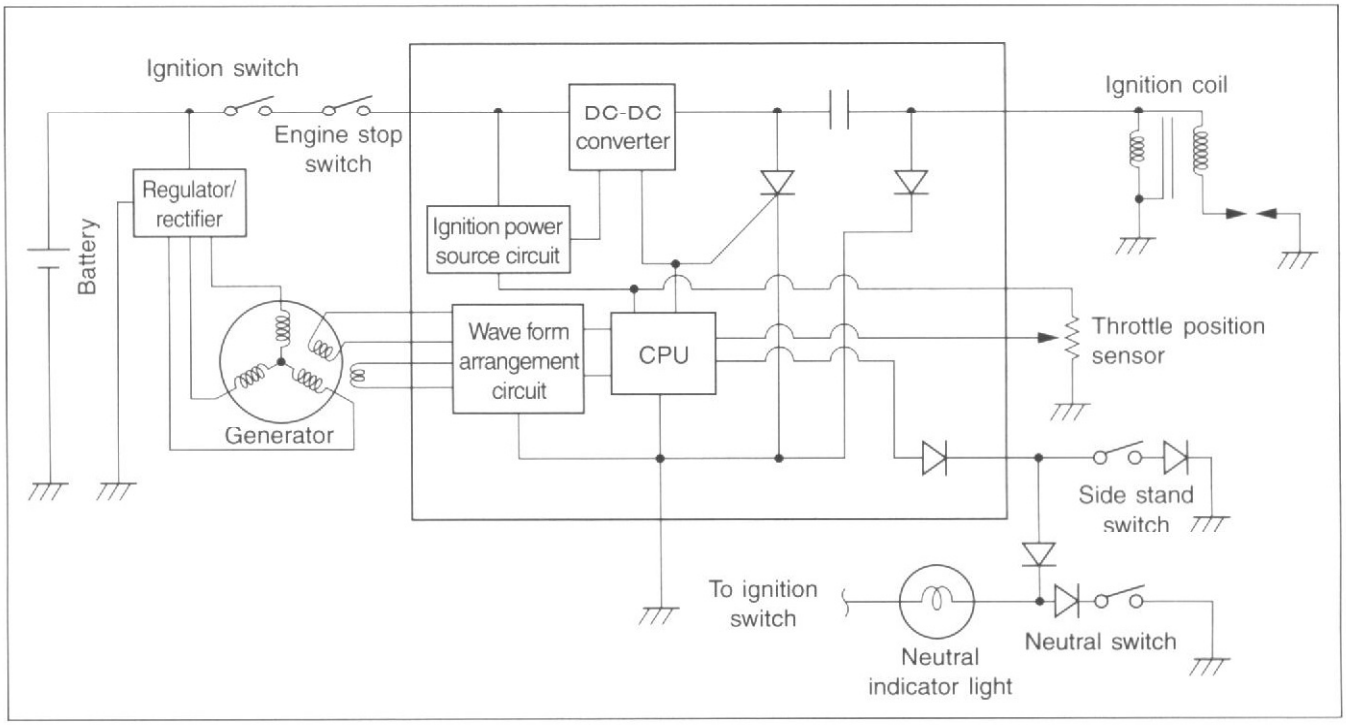
NOTE:

If the multi circuit tester reads under 1.4 V, replace its battery when the tester probes are not connected.

IGNITION SYSTEM

DESCRIPTION

In the capacitor discharged ignition system, the electrical energy generated by the generator charges the capacitor. This energy is released in a single surge at the specified ignition timing point and the current flows through the primary side of the ignition coil. A high voltage is induced in the secondary windings of the ignition coil, resulting in a strong spark between the spark plug gap.



TROUBLESHOOTING

No spark or poor spark

* Make sure the transmission is in the neutral position. Also, make sure the fuse is not blown and the battery is fullycharged before diagnosing.

Check the ignition system couplers for poor connections.

- Loose → • Improper coupler connection

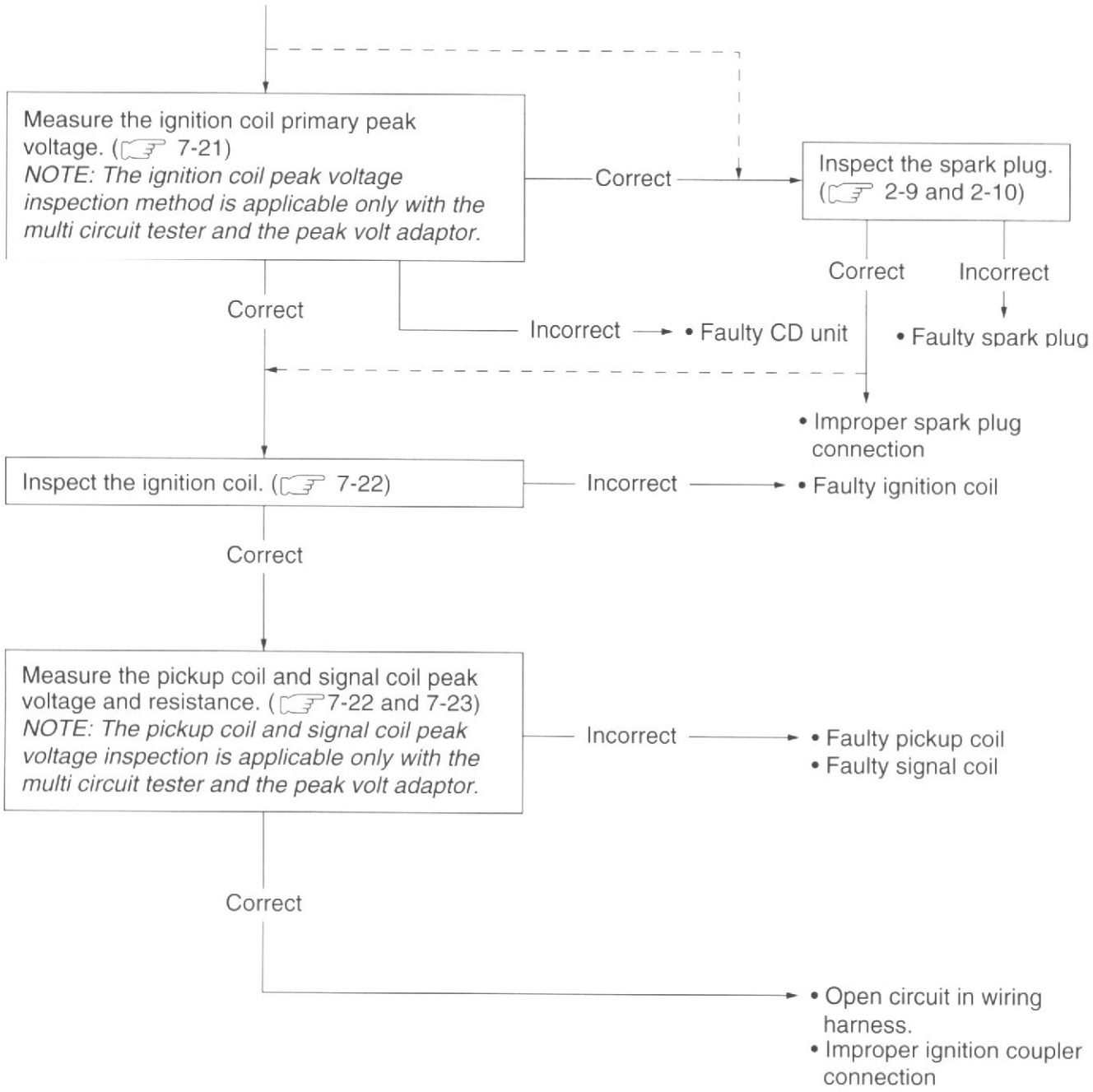
Correct

Measure the battery voltage between input lead wires (O/W and B/W) at the CDI unit with the ignition switch in the "ON" position and the engine stop switch in the "RUN" position.

- Incorrect → • Faulty ignition switch
  • Faulty engine stop switch
  • Broken wire harness or poor connection of related circuit couplers

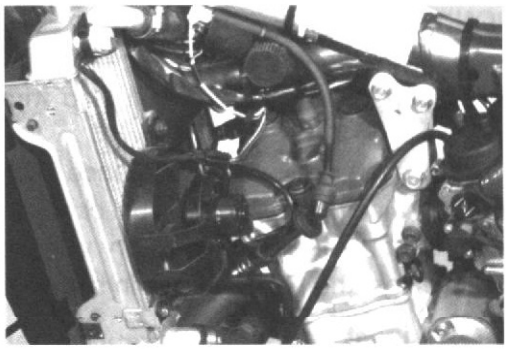
Correct

Continued on next page


Measure the ignition coil primary peak voltage. (☞ 7-21)
NOTE: The ignition coil peak voltage inspection method is applicable only with the multi circuit tester and the peak volt adaptor.
Correct
Inspect the spark plug. (☞ 2-9 and 2-10)
Correct
Incorrect
• Faulty spark plug
Correct
Incorrect
• Faulty CD unit
• Improper spark plug connection
Inspect the ignition coil. (☞ 7-22)
Incorrect
• Faulty ignition coil
Correct
Measure the pickup coil and signal coil peak voltage and resistance. (☞ 7-22 and 7-23)
NOTE: The pickup coil and signal coil peak voltage inspection is applicable only with the multi circuit tester and the peak volt adaptor.
Incorrect
• Faulty pickup coil
• Faulty signal coil
Correct
• Open circuit in wiring harness.
• Improper ignition coupler connection

INSPECTION

IGNITION COIL PRIMARY PEAK VOLTAGE



- Remove the fuel tank. (☞ 4-2)
- Remove the spark plug cap and spark plug.
- Connect a new spark plug to the spark plug cap and ground it to the cylinder head.

NOTE:
Make sure that the spark plug cap and spark plug are connected properly.

⚠ CAUTION

Do not let the spark plug touch the cylinder head cover, otherwise the cylinder head cover may be damaged.

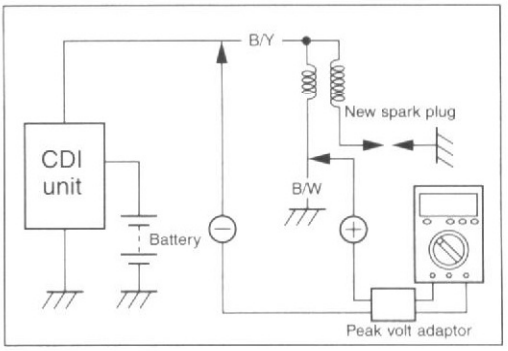
Measure ignition coil primary peak voltage using the multi circuit tester in the following procedure.

- Connect the multi circuit tester with the peak voltage adaptor as follows.

Ignition coil:

Black/White terminal (⊕ probe)	–	Black/Yellow (⊖ probe)

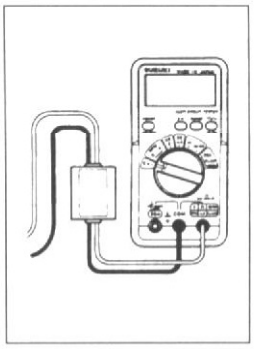
NOTE:
Do not disconnect the ignition coil primary wire.



TOOL 09900-25008: Multi circuit tester set

⚠ CAUTION

Before using the multi circuit tester and peak volt adaptor, be sure to refer to the appropriate instruction manual.



- Shift the transmission into neutral, and then turn the ignition switch to the "ON" position.
- Pull the clutch lever.
- Press the starter button and allow the engine to crank for a few seconds, and then measure the ignition coil primary peak voltage.
- Repeat the above procedure a few times and measure the highest ignition coil primary peak voltage.

Tester knob indication: Voltage (⎓)

DATA Ignition coil primary peak voltage: More than 150 V

⚠ WARNING

While testing, do not touch the tester probes and spark plug to prevent receiving an electric shock.

If the voltage is lower than the specified values, inspect the ignition coil. (☞ 7-22)

IGNITION COIL RESISTANCE

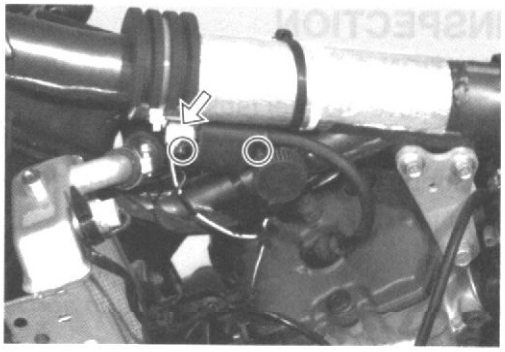
- Remove the fuel tank. (☞ 4-2)
- Disconnect the ignition coil lead wire, and then remove the ignition coil.

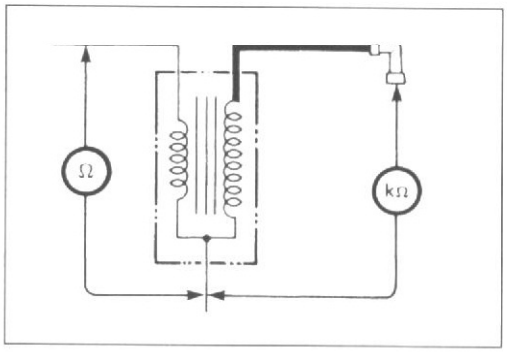
Measure the ignition coil resistance in both the primary and secondary windings using the multi circuit tester. If the resistance in both the primary and secondary windings is close to the specified values, the windings are in sound condition.

TOOL 09900-25008: Multi circuit tester set

Tester knob indication: Resistance (Ω)

DATA Ignition coil resistance
Primary: 0.1 – 1.0 Ω (terminal – ground)
Secondary: 12 – 20 kΩ (terminal – spark plug cap)





PICKUP COIL AND SIGNAL COIL PEAK VOLTAGE

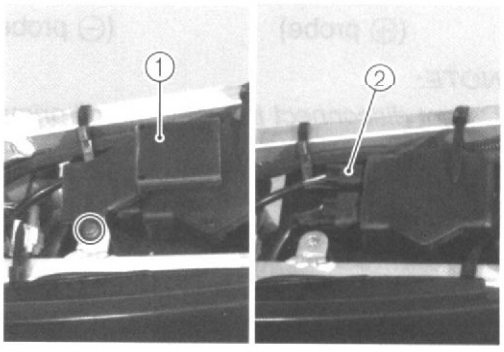
NOTE:
Make sure that all of the couplers are connected properly.

- Remove the seat. (☞ 6-2)
- Remove the CDI unit cover ① and disconnect the wire harness coupler ②.

Measure the pickup coil and signal coil peak voltage in the following procedure.

- Connect the multi circuit tester with the peak volt adaptor as follows.

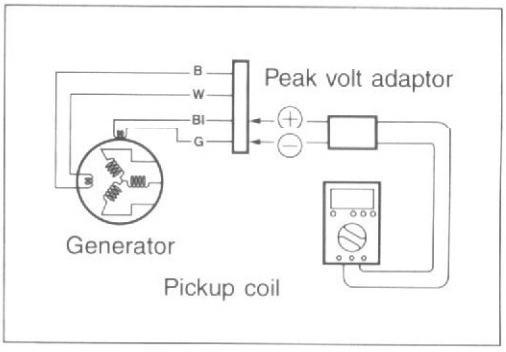
Pickup coil: Blue (⊕ probe) – Green (⊖ probe)
Signal coil: Black (⊕ probe) – White (⊖ probe)



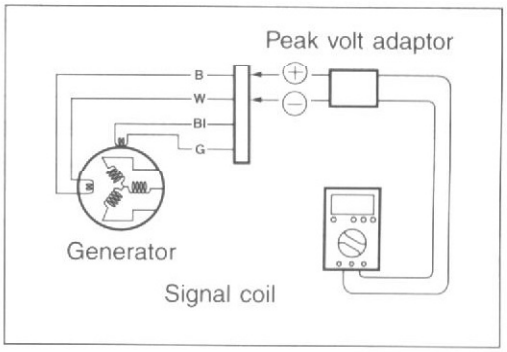
TOOL 09900-25008: Multi circuit tester set

⚠ CAUTION

Before using the multi circuit tester and peak volt adaptor, be sure to refer to the appropriate instruction manual.



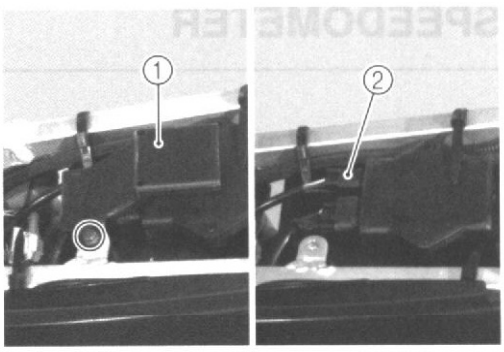
- Shift the transmission into neutral, and then turn the ignition switch to the "ON" position.
- Pull the clutch lever.
- Press the starter button and allow the engine to crank for a few seconds, and then measure the pickup coil and signal coil peak voltage.
- Repeat the above procedure a few times and measure the highest pickup coil and signal coil peak voltage.



Tester knob indication: Voltage (⎓)

DATA Pickup coil peak voltage: More than 5.0 V
Signal coil peak voltage: More than 1.4 V

PICKUP COIL AND SIGNAL COIL RESISTANCE



- Remove the seat. (☞ 6-2)
- Remove the CDI unit cover ① and disconnect the generator coupler ②.

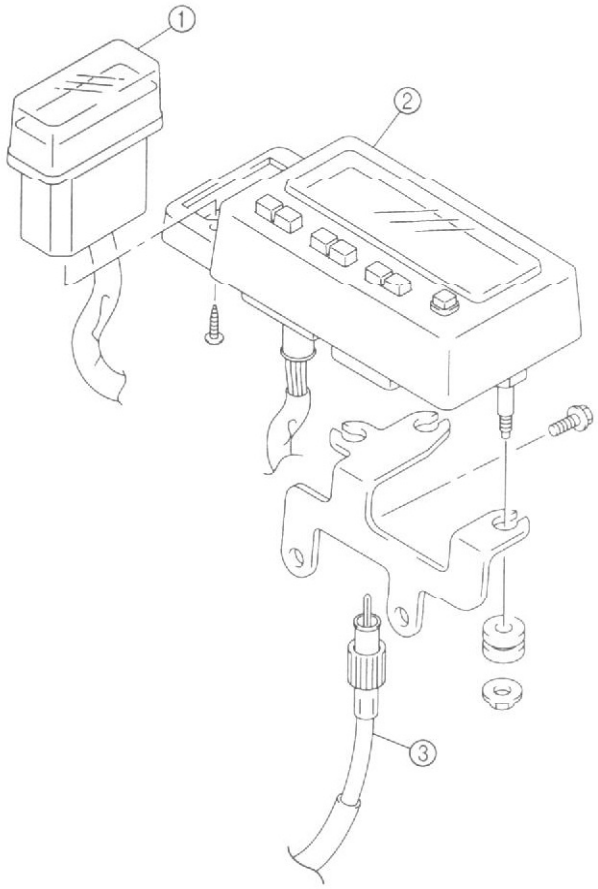
Measure the resistance between the lead wires using the multi circuit tester. If the resistance is not within the specified value, the pickup coil and signal coil must be replaced.

09900-25008: Multi circuit tester set

Tester knob indication: Resistance (Ω)

Pickup coil resistance: 390 – 600 Ω (Blue – Green)
Signal coil resistance: 0.05 – 0.20 Ω (Black – White)

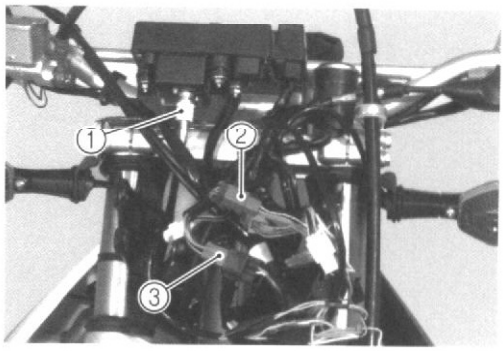
SPEEDOMETER



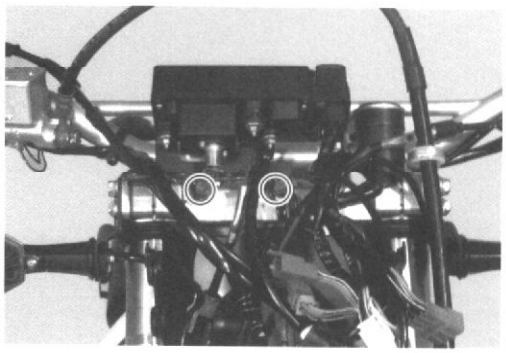
① Indicator light assembly
② Speedometer assembly
③ Speedometer cable

REMOVAL

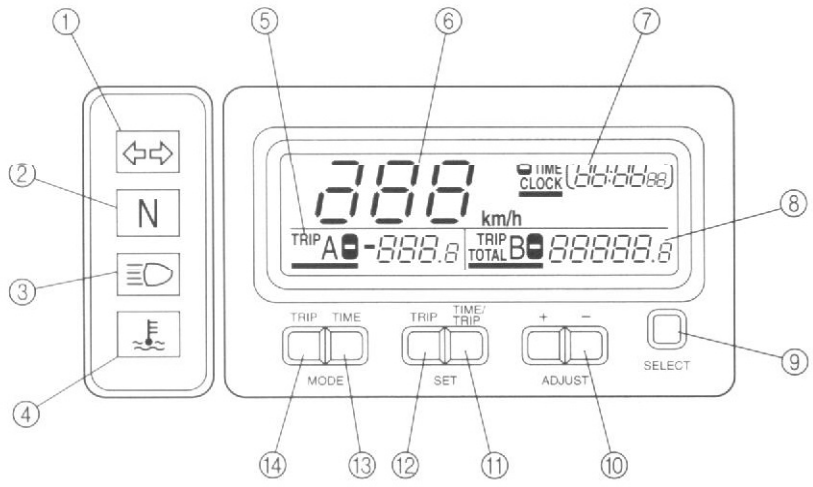
- Remove the headlight assembly. (☞ 7-29)
- Disconnect the speedometer cable ①, speedometer coupler ②, and indicator lights coupler ③.



- Remove the speedometer assembly.



PARTS NAMES



① Turn signal indicator light
② Neutral indicator light
③ High beam indicator light
④ Engine coolant temperature indicator light
⑤ Tripmeter A
⑥ Speedometer
⑦ Clock/stopwatch/timer
⑧ Tripmeter B/odometer
⑨ SELECT button (For E-02, 03, 33)
⑩ ADJUST button
⑪ SET TIME/TRIP button
⑫ SET TRIP button
⑬ MODE TIME button
⑭ MODE TRIP button

OPERATING PROCEDURE

INITIAL DISPLAY

When the ignition switch is set to ON, all indicators light up for one second.

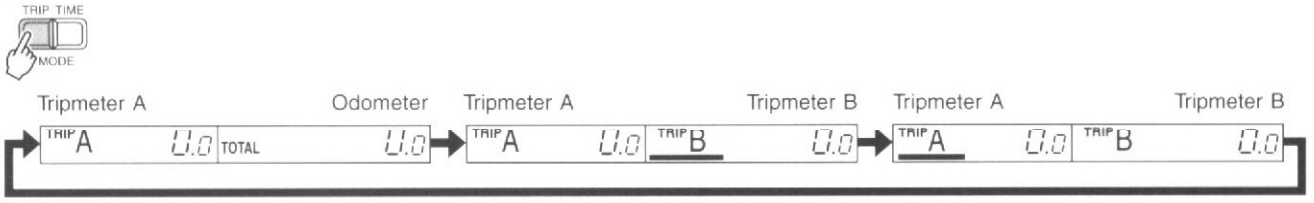
NOTE:

If the power supply is cut (e.g., when the battery is replaced):

* *The speedometer, clock, tripmeter A and odometer are displayed after the initial display appears.*
* *Since the clock resets to "1:00 00", it will need to be re-adjusted.*
* *The odometer, tripmeter A and B, tripmeter calculation modes (addition and subtraction), and the calibration coefficients are not affected.*

CHANGING THE DISPLAY MODE

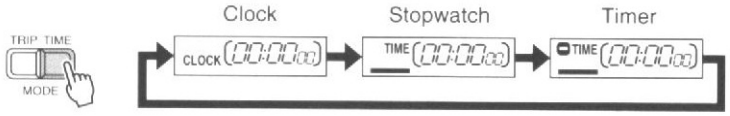
With each press of the MODE TRIP button, the display changes between tripmeter A, tripmeter B and the odometer as shown below.



NOTE:

* *The cursor (—) indicates that the setting can be changed. The cursor appears at only one position at a time.*

With each press of the MODE TIME button, the display changes between the clock, the stopwatch and the timer as shown below.



Hold down the SELECT button for three seconds to change the display as shown below. (For E-02, 03, 33)

⚠ WARNING

To avoid riding with only one hand, do not operate the buttons while riding.

NOTE:

* *Make sure not to press more than one button at a time.*
* *Before performing the operations described in this section, be sure to start the engine in order to prevent the battery from being drained.*

ODOMETER

- Displays the total distance travelled

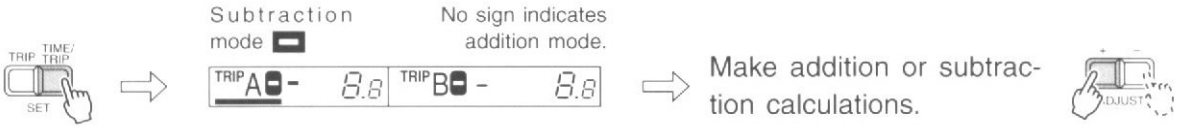
TRIPMETER

- Displays the distance travelled since the tripmeter was last reset.

NOTE:

The tripmeters A and B can be used independently.

- Switching between addition and subtraction modes

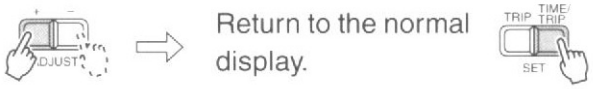


- Press the SET TRIP button to reset the tripmeter.

- Displays the distance with a calibration coefficient (70 – 130 %) applied

Hold down the SET TIME/TRIP button for three seconds.

Select the calibration coefficient.

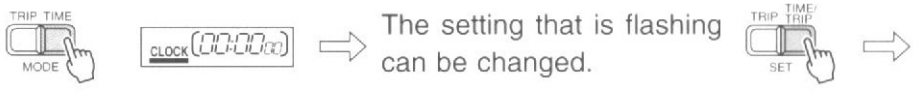


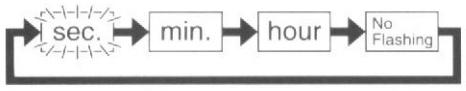
CLOCK

- Displays the time (hours, minutes and seconds) on a 24-hour clock

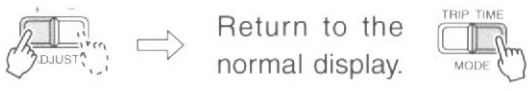
- Setting the time

Hold down the MODE TIME button for three seconds.





Select the correct time.



STOPWATCH

- This 24-hour stopwatch displays the minutes, seconds and 1/100 seconds up to one hour. After one hour, the hours, minutes and seconds are displayed.

Start

⇨ Stop

⇨ Hold down the button for three seconds to reset the stopwatch.

TIMER

- This 24-hour timer (or countdown timer) displays the minutes, seconds and 1/100 seconds up to one hour. After one hour, the hours, minutes and seconds are displayed.

Set the timer.

The setting that is flashing can be changed.

⇨

Select the time that the timer will countdown from.

⇨ Finish entering settings.

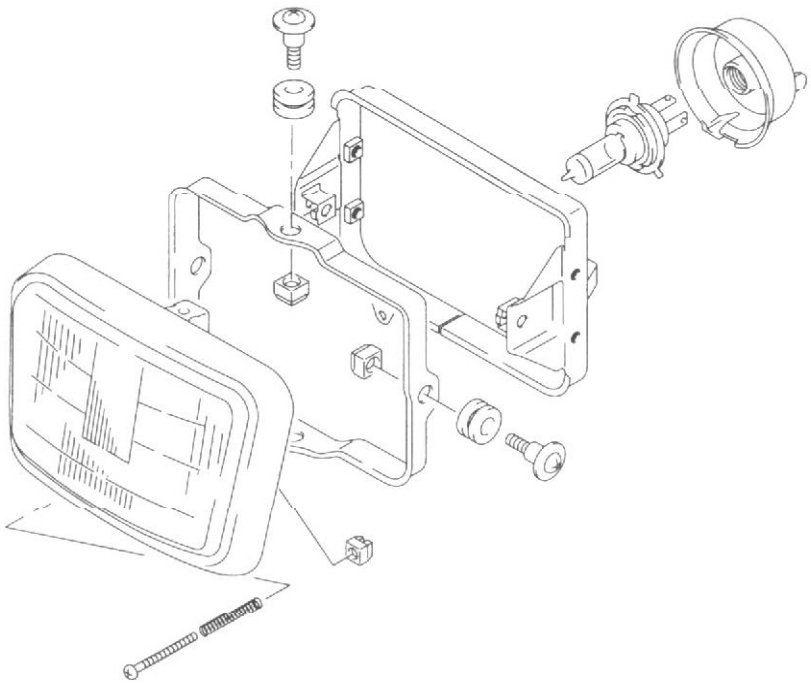
⇨ Start

⇨

⇨ Stop

⇨ Hold down the button for three seconds to reset the timer.

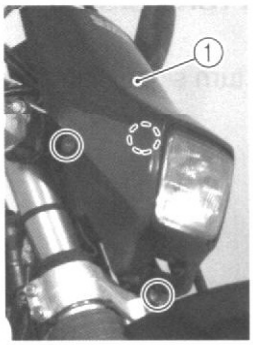
LAMPS
HEADLIGHT

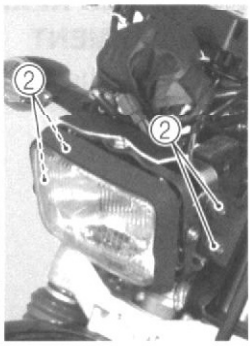


Headlight bulb : 12 V 60/55 W
Position light : 12 V 4 W (Except for E-03, 28, 33)

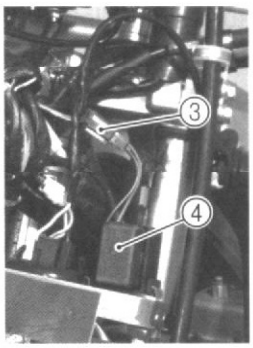
BULB REPLACEMENT

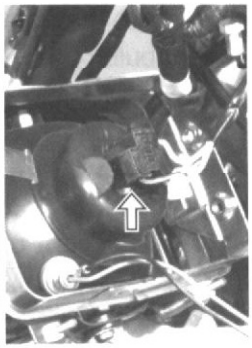
- Remove the headlight cover ① and headlight bracket mounting bolt ②.



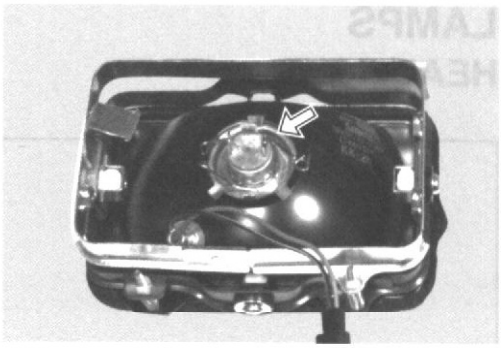


- Remove the position light coupler ③. (For E-02, 19, 54)
- Remove the turn signal/side stand relay ④.
- Disconnect the headlight coupler and remove the headlight assembly.





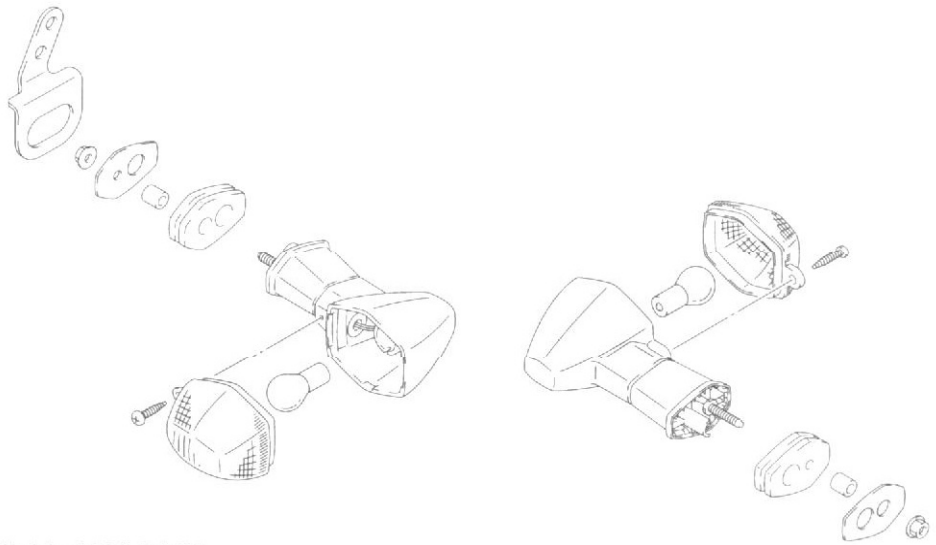
- Remove the rubber cap.
- Remove the bulb.
- Install the new bulb in the reverse order of removal.



⚠ CAUTION

If you touch the bulb with your bare hands, clean the bulb with a cloth moistened with alcohol or soapy water to prevent premature bulb failure.

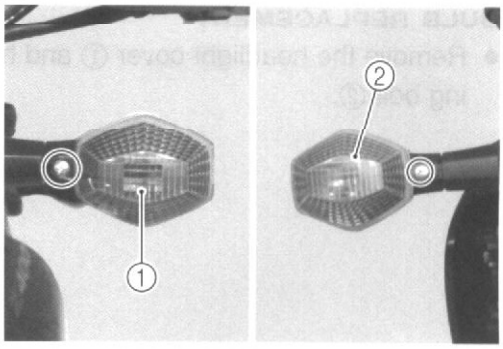
FRONT AND REAR TURN SIGNAL LIGHT



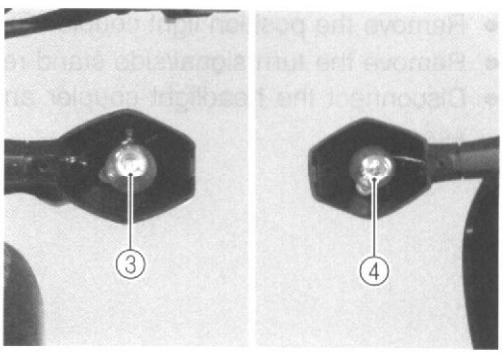
Turn signal light: 12 V 21 W

FRONT AND REAR TURN SIGNAL LIGHT BULB REPLACEMENT

- Remove the front turn signal light lens ① and rear turn signal light lens ②.



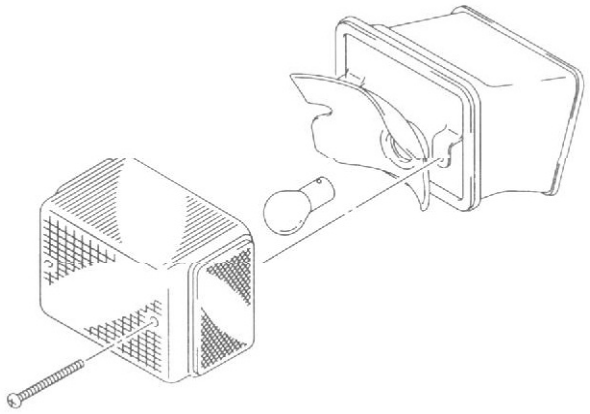
- Remove the front turn signal light bulb ③ and rear turn signal light bulb ④.



⚠ CAUTION

If you touch the bulb with your bare hands, clean the bulb with a cloth moistened with alcohol or soapy water to prevent premature bulb failure.

BRAKE LIGHT/TAILLIGHT

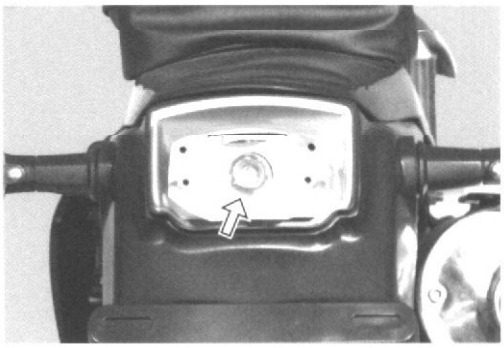


Brake light/taillight: 12 V 21/5 W

BRAKE LIGHT/TAILLIGHT BULB REPLACEMENT

- Remove the brake light/taillight lens.

- Remove the brake light/taillight bulb.



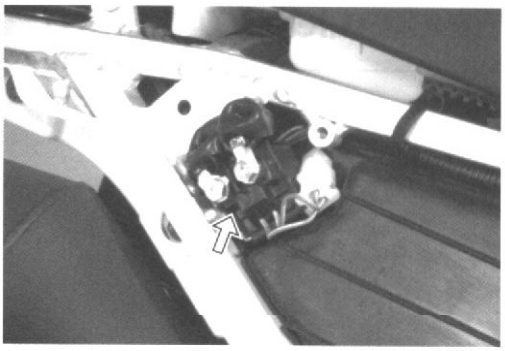
⚠ CAUTION

If you touch the bulb with your bare hands, clean the bulb with a cloth moistened with alcohol or soapy water to prevent premature bulb failure.

RELAYS

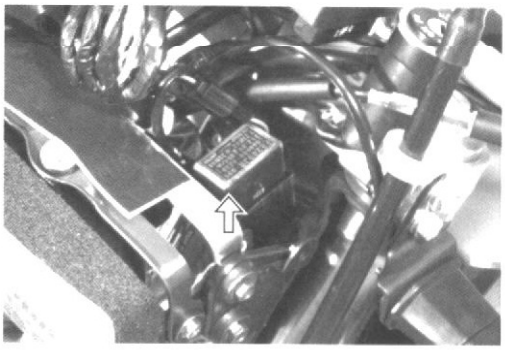
STARTER RELAY

The starter relay is located behind the right frame cover. (☞ 7-16)



TURN SIGNAL/SIDE STAND RELAY

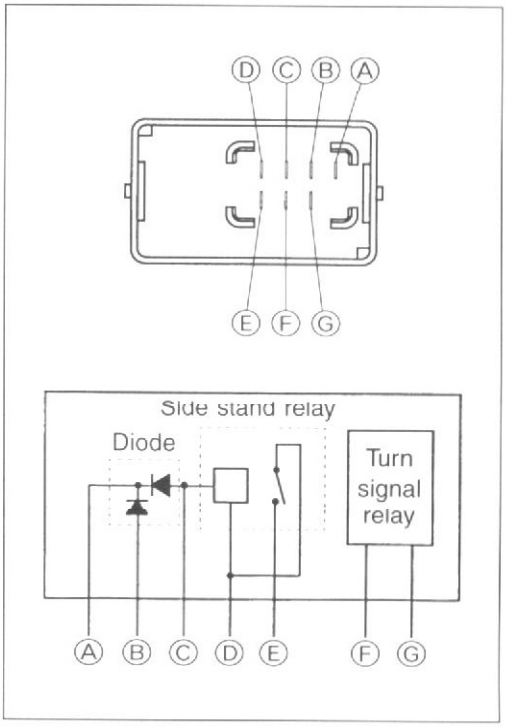
The turn signal/side stand relay, which is located behind the headlight bracket, is composed of the turn signal relay, and the side stand relay and diode.



INSPECTION

Before removing the turn signal/side stand relay, check the operation of the turn signal light.
If the turn signal light does not illuminate, inspect the bulb, turn signal switch and circuit connection.
If the bulb, turn signal switch and circuit connection are OK, the turn signal relay may be faulty; therefore, replace the turn signal/side stand relay with a new one.

NOTE:
Make sure that the battery is fully charged.



SWITCHES

Measure each switch for continuity using a multi circuit tester. If any abnormality is found, replace the respective switch assemblies with a new one.

09900-25008: Multi circuit tester set

IGNITION SWITCH

Position \ Color	R	O	Gr	Br
OFF				
ON	○——	——○	○——	——○
P	○——			——○

LIGHTING SWITCH (Except for E-03, 28, 33)

Position \ Color	O	Gr	Y/W
OFF			
S	○——	——○	
ON	○——	——○	——○

DIMMER SWITCH

Position \ Color	Y/W	W	Y
HI (≡○)	○——		——○
LO (≡○)	○——	——○	

TURN SIGNAL SWITCH

Position \ Color	Lg	Lbl	B
L (⇦)		○——	——○
PUSH			
R (⇨)	○——	——○	

ENGINE STOP SWITCH

Position \ Color	O/Y	O/W
OFF (⊗)		
RUN (○)	○——	——○

PASSING LIGHT SWITCH (Except for E-03, 28, 33)

Position \ Color	O/B	Y
•		
PUSH	○——	——○

STARTER BUTTON

Position \ Color	O/W	Y/G
•		
PUSH	○——	——○

HORN BUTTON

Position \ Color	B/Bl	B/W
•		
PUSH	○——	——○

FRONT BRAKE LIGHT SWITCH

Position \ Color	B	B/R
OFF		
ON	○——	——○

REAR BRAKE LIGHT SWITCH

Position \ Color	O	W/B
OFF		
ON	○——	——○

CLUTCH LEVER POSITION SWITCH

Position \ Color	Y/G	Y/G
OFF		
ON	○——	——○

WIRE COLOR

B	: Black	Lbl	: Light blue	R	: Red
Br	: Brown	Lg	: Light green	W	: White
Gr	: Gray	O	: Orange	Y	: Yellow

B/Bl	: Black with Blue tracer	O/Y	: Orange with Yellow tracer
B/R	: Black with Red tracer	W/B	: White with Black tracer
B/W	: Black with White tracer	Y/G	: Yellow with Green tracer
O/R	: Orange with Red tracer	Y/W	: Yellow with White tracer
O/W	: Orange with White tracer		

BATTERY

REMOVAL

- Remove the battery cover. (☞ 6-2)
- Remove the battery holder.

- Remove the battery.

NOTE:
Disconnect the ⊖ battery lead wire, first.

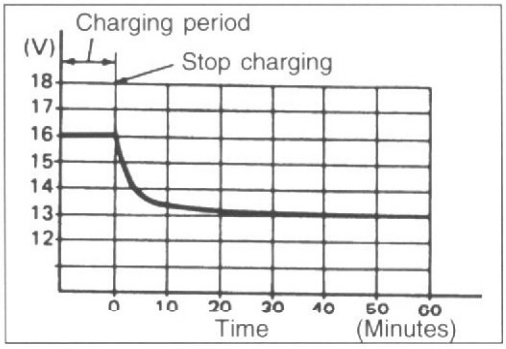
SPECIFICATIONS

Type designation	GT7B-4
Capacity	12 V, 23.4 kC (6.5 Ah)/10 HR

SERVICING

Visually inspect the surface of the battery container. If any signs of cracking or electrolyte leakage from the sides of the battery have occurred, replace the battery with a new one. If the battery terminals are found to be coated with rust or an acidic white powdery substance, clean the battery terminals with sandpaper.

RECHARGING OPERATION



- Measure the battery voltage using the multi circuit tester or digital volt meter. If the voltage reading is less than the 12.6 V (DC), recharge the battery with a MF battery charger.

⚠ CAUTION

When recharging the battery, remove the battery from the motorcycle.

Recharging time: 0.65 A for 5 to 10 hours.

⚠ CAUTION

Do not attempt boost charging under any circumstances.

- After recharging, wait at least 30 minutes and then measure the battery voltage using the multi circuit tester. If the battery voltage is less than 12.6 V, recharge the battery again. If the battery voltage is still less than 12.6 V after recharging, replace the battery with a new one.

When a battery is left unused for a long time, its voltage needs to be regularly measured. When the motorcycle is not used for more than one month (especially during the winter season), measure the battery voltage at least once a month.

EMISSION CONTROL INFORMATION

CONTENTS

EMISSION CONTROL CARBURETOR COMPONENTS 9- 2
EVAPORATIVE EMISSION CONTROL SYSTEM (FOR E-33) 9- 3
CANISTER HOSE ROUTING 9- 4
INSPECTION 9- 5

EMISSION CONTROL CARBURETOR COMPONENTS

The DR-Z400S is equipped with precision carburetors that control emission levels.
These carburetors require special mixture control components and precision adjustments to function properly.
There are several carburetor mixture control components in each carburetor assembly. Three jets (main, needle and pilot) are machined to much closer tolerances than standard machined jets. Do not replace these three jets with standard jets. To aid in identifying these jets, a different letter and number design is used. If replacement of the jets is needed, be sure to replace them only with the same type of jets as desribed below.
A jet needle with only one clip position, is also used. If jet needle replacement is necessary, only replace it with a jet needle of the same type. Suzuki recommends that Genuine Suzuki Parts be utilized whenever possible for the best possible performance and durability.

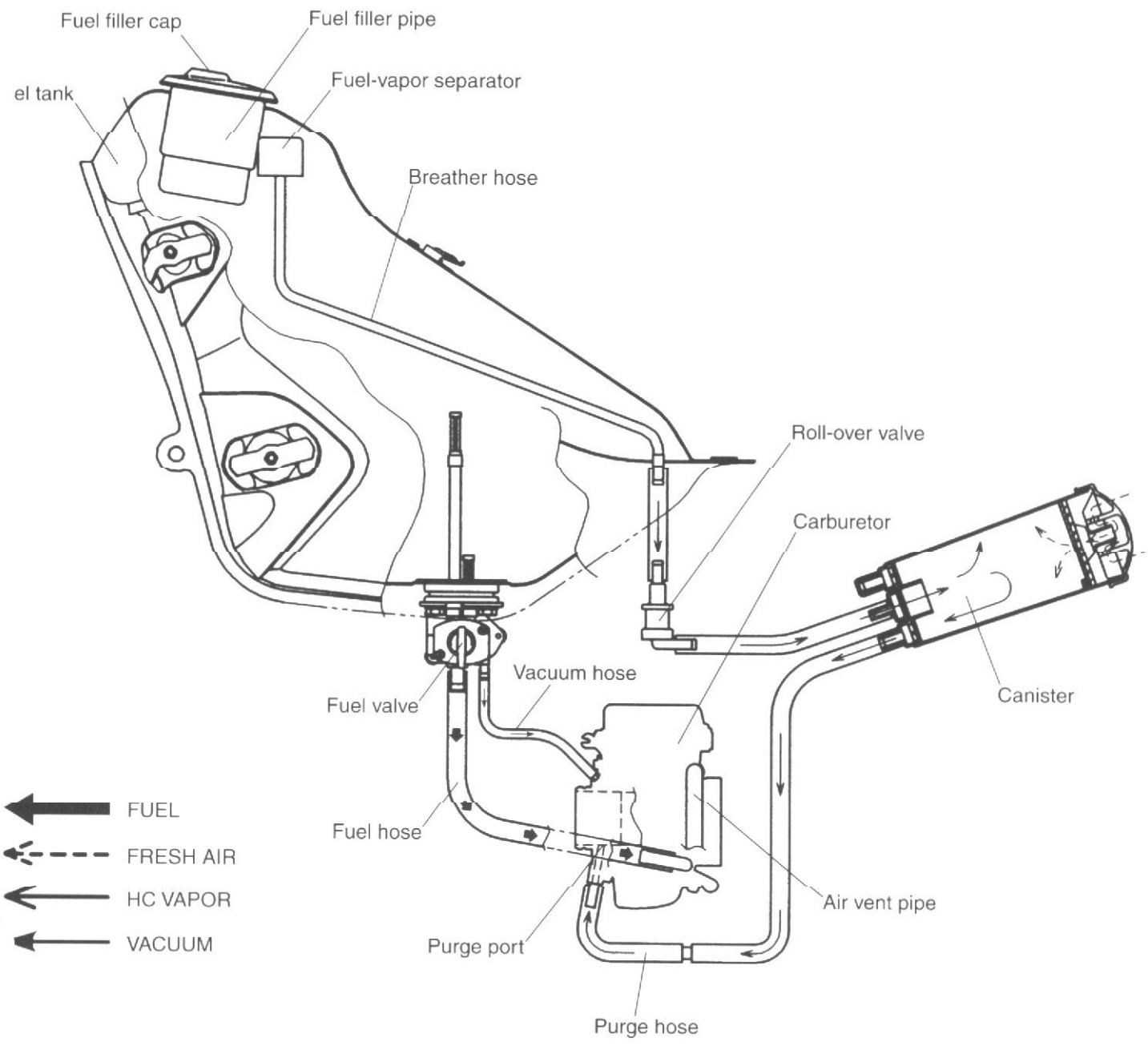
Conventional figures used on standard tolerance jet components	1 2 3 4 5 6 7 8 9 0
Emission type figures used on close tolerance jet components	1 2 3 4 5 6 7 8 9 0

The carburetor specifications for the emission-controlled DR-Z400S are as follows.

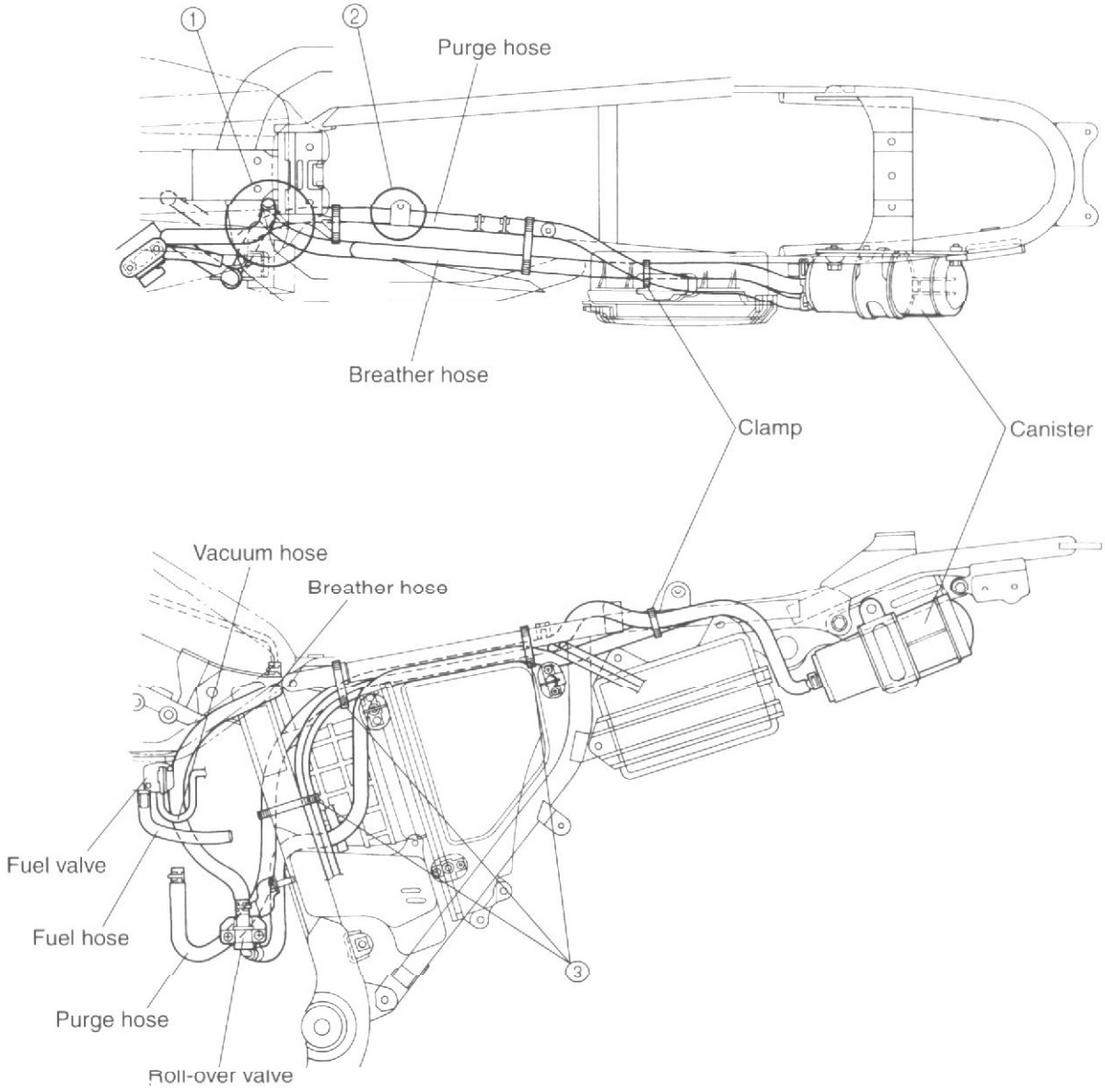
Carburetor I.D. No.	Main Jet	Needle Jet	Jet Needle	Pilot Jet	Pilot Screw
29FC (California model only)	#142.5	P-0M	5DH37	#22.5	PRESET DO NOT ADJUST
29FB	#142.5	P-0M	5DH37	#22.5	

Adjusting, interfering with, improper replacement, or resetting of any of the carburetor components may adversely affect carburetor performance and cause the motorcycle to exceed the exhaust emission level limits. If you are unable to effectively repair this motorcycle, contact the distributor's representative for further technical information and assistance.

EVAPORATIVE EMISSION CONTROL SYSTEM (FOR E-33)



CANISTER HOSE ROUTING



① Set the formed side of the hose to the fuel tank and face the exhaust end of the hose to the left.
② Pass the purge hose under the frame air cleaner fitting bracket.
③ Clamp the hose with the wire harness.

INSPECTION

- Remove the fuel tank. (☞ 4-2)

HOSES

Inspect the hoses for wear or damage. If any damages are found, replace the hoses with new ones.
Make sure that the hoses are properly connected.

CANISTER

Inspect the canister body for damage. If any damages are found, replace the canister with a new one.